THE RUBBER AGE

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THE RUBBER AGE

H. S. VORHIS, BUSINESS MANAGER
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VOL. IX AUGUST 25, 1921 No. 10

Air Conditioning in Rubber Manufacture

By J. Esten Bolling, M. E.

Carrier Engineering Corporation, Newark, N. J.

Like the little boy who, when asked if he liked meringue glace, said: "Lemme see one first", it is perhaps wise to first tell you something about air conditioning itself before we submit certain ideas pertaining to its application in your particular industry, rubber manufacture.

Air is so familiar to us that most of us have a sort of contempt for it, bred of that familiarity. Most of us seem to regard air as an abstract necessity, of which we must have enough for breathing purposes. We realize, it is true, that in winter the outdoor air is cold and in summer it is hot. We have a vague perception, also, that sometimes outdoor air is more moist than at other times. We say "Whew! Isn't it hot and stuffy today. The humidity is fearful." But, withal, most of us are prone to look upon the weather as a thing which is thrust upon us in accordance with the whims of nature. If it is good weather, we grin and say "Fine day, isn't it?" If bad, we grumble and say "Nasty weather. Always this way in this miserable climate. Wish I was in Tahiti."

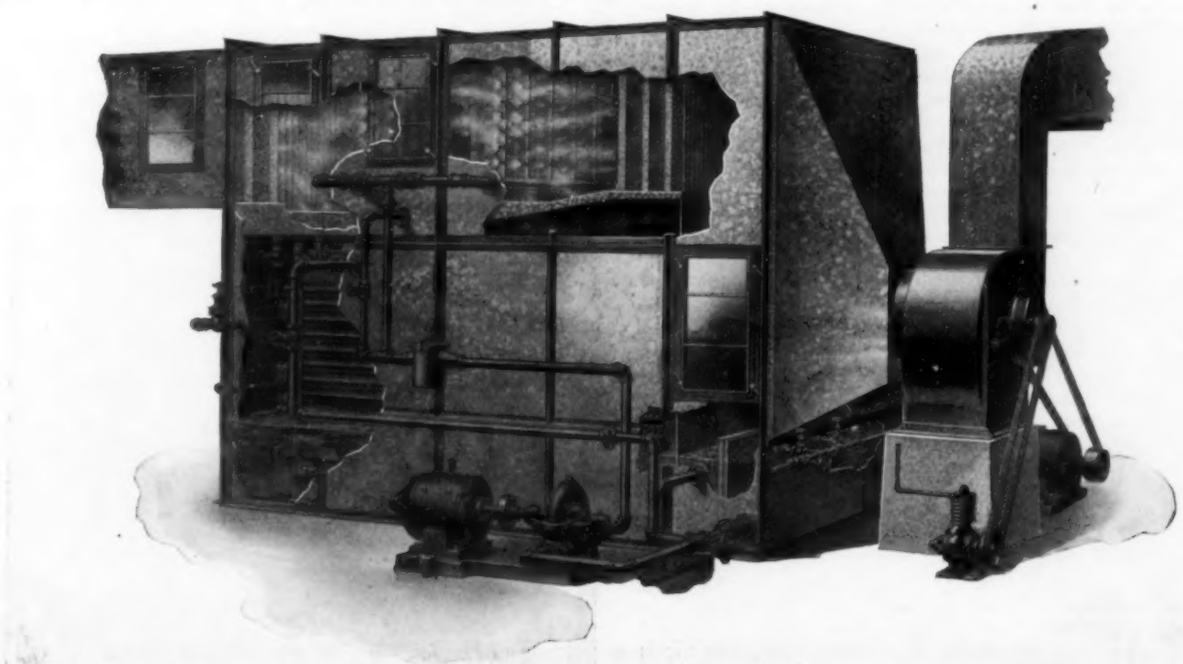
Few of us ever stop to think that, although we can do nothing to control the weather in the great outdoors, we can within our homes and industrial buildings manufacture exactly the kind of weather we want, regardless of the outside conditions.

But, as we say, let us first answer the question, "What is weather?" since that will also answer the question "What is air conditioning", which is "manufactured weather".

"Weather" we glibly say, "is the condition of the atmosphere". True. But after all, when we think about it, our interest lies not in a definition of weather, but in an exposition of what weather means,—of its effects upon human beings and materials.

It is in the latter vein that we, ourselves, habitually regard weather—not as a condition of the atmosphere, but as an *agency* or cause which produces certain effects upon us and upon our materials in process of manufacture.

We usually think of air conditioning equipment as a mechanical means for manufacturing weather, and we find that air conditioning involves four principal factors, i.e., the control of (1) temperature, (2) the humidity or moistness, (3) the purity or cleanliness, and (4) the effective movement or distribution of air.



PERSPECTIVE DRAWING OF TYPICAL SELF-CONTAINED CONDITIONING MACHINE (DEHUMIDIFIER) SHOWING THE UPPER CHAMBER CONTAINING THE SPRAYS AND THROUGH WHICH THE AIR PASSES; AND THE LOWER CHAMBER, CONTAINING THE REFRIGERATING COILS OVER WHICH THE SPRAY WATER DRIPS FOR COOLING.

With temperature, as we ordinarily think of it, we are familiar. Many of us do not realize, however, that the temperature shown on an ordinary thermometer, (what engineers call the dry bulb temperature) is not, alone, a real indication of the air's condition. A simple example of this is occurring as this article is written. The dry bulb temperature in the

A Typical Dipping Room, Showing the Solution Tank on Wheels. Note the Air Duct to the Right Center of the Picture.

writer's office, as indicated on a mercury thermometer, is 93 degrees. Since he is very uncomfortable, however, he knows that the humidity is high, because he remembers many 93 degree days upon which he felt far less discomfort. He remembers days in Denver when the dry bulb showed 96 degrees and there was no serious discomfort indoors. Obviously, then, the dry bulb temperature is not sufficient to indicate the condition of air with respect to comfort, and, as we shall later show, with respect to atmospheric effects upon materials.

The important factor is humidity, as this is *related* to the dry bulb temperature, and the reason for this is comparatively simple.

Air has the property of absorbing water vapor, in the sense that the vapor becomes diffused through the air as a mechanical mixture. The quantity of water vapor which one cubic foot of air will absorb depends upon the *temperature* of the air. When the air has absorbed all the water vapor it can carry, it is said to be *saturated*. One cubic foot of air at zero F. is saturated when it contains less than 0.5 of one grain of vapor. (A grain is 1/7000 of 1 lb.). One cubic foot of air at 70 deg. F. is not saturated until it contains 8 grains of vapor, more than sixteen times as much as the same cubic foot can carry when at zero.

The term "relative humidity" which occurs so frequently in discussions of air conditioning, means "relative to *temperture*". For instance, that cubic foot of air at zero temperature and containing 0.5 of one grain of water vapor is saturated, or the air, *at that temperature,* contains 100 per cent of the vapor it can carry. If, however, the same air is heated, its capacity to carry water vapor is *increased,* as stated. Since it contains the original 0.5 grain it has but 1/16 or 6¼ per cent of the vapor it *could* carry at its new temperature. So we say that its relative humidity is 6¼ per cent.

To put it in the form of a definition: *Relative humidity is an expression in percentage of the degree of saturation of air at a given temperature.*

Obviously the relative humidity is affected either by a change in temperature or a change in vapor content. As an example, the relative humidity in the case cited was *decreased* from 100 per cent (saturation) to 6¼ merely by heating the air from 0 degrees to 70 degrees.

If the 70 degree air were brought into contact with water until the air had absorbed the additional 3.5 grains of vapor per cubic foot, bringing the total vapor content to 4 grains per cubic foot, the air would then contain one-half of the amount of vapor required to saturate it, and its relative humidity would therefore be 50 per cent.

Humidity Control and Temperature Control

Humidity control, therefore, goes hand in hand with *temperature* control. They are as inseparable as a pair of pants.

We want to impress this fact upon you. Relative humidity is a function of moisture content *and* temperature.

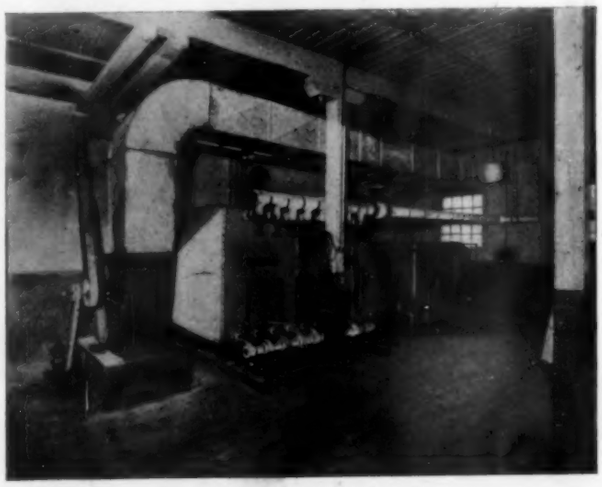
The effect of atmospheric moisture upon human beings and upon products in process of manufacture, is measured by the existing relative humidity. You might think, for instance, that 70 degree air, containing 4 grains of vapor per cubic foot, the relative humidity being 50 per cent (as pointed out above), is no "wetter" (in the sense of its *moistening effect* upon materials exposed to it) than the same air containing the same 4 grains of vapor, but at a temperature of say 83 deg. F.

But it is and for this reason. The 70 deg. air is 50 per cent saturated, i.e., its relative humidity is 50 per cent. The 83 deg. air, however, is but 33 1/3 per cent saturated, i.e., its relative humidity is but 33 1/3 per cent. (This is so because 12 grains of vapor per cubic foot are required to saturate air at 83 deg.) Air 50 per cent saturated will yield a part of its moisture to the materials it surrounds more readily than air only 33 1/3 per cent saturated.

Similarly, you would spend money more readily if you had 50 per cent of what you wanted than if you had but 33 1/3 per cent.

Therefore, to repeat, fixing the actual vapor content is but half the battle. We must regulate the *temperature* also. Or, to put it in other words, since it is the relative humidity (and not the actual vapor content) which measures atmospheric effect, we must control both the actual vapor content and the temperature.

We are insistent upon this explanation because so many people seem to regard humidification as a problem involving only the addition of moisture to the air. We know several textile mills, for instance, where "humidifier heads" (atomizers) have been installed under the misapprehension that the owners were purchasing "air conditioning equipment". From



Typical Unit of Conditioning Apparatus as Applied to a Rubber Dryer, Comprising the Fan, Humidifier, Heaters and Complete Automatic Control

the above explanation, the utter fallacy of the thing must be obvious.

On the other hand, there are some candy plants where air is cooled by means of direct expansion "bunker coils". In this case the owners have gone to the other extreme—depending upon *temperature* alone, when humidity is the real problem.

If the term "relative humidity" now clearly conveys a meaning to your mind and if, in addition, you understand that relative humidity involves *both* actual vapor content and temperature, then this definition is complete.

Practical Methods Employed

For your further information, however, while you have the facts in mind, it is well to explain the practical methods employed to automatically effect a control of the two factors which fix relative humidity. A humidifier is a machine for adding moisture to the air. It consists, essentially, of a galvanized iron chamber containing a number of spray heads and provided with a water settling tank at the bottom. At either end of the chamber baffle plates are placed, so that the spray cannot backlash out of the machine, nor be carried forward into the fan. The water from the settling tank is pumped through the spray nozzles, which break it up into a fine dense mist, completely filling the spray chamber. The temperature of the spray water is automatically regulated by means of steam, and as the air passes through the spray chamber it is fully saturated with water vapor *at any temperature which may be required*, thereby definitely fixing its vapor content.

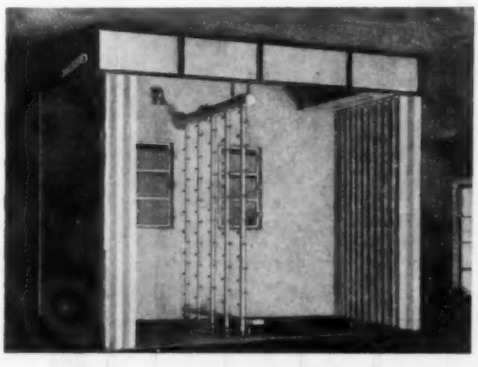
Having fixed the first factor, *vapor content*, the air is passed through a steam (or other) heater, and the second factor, *temperature*, is also automatically controlled. The temperature controlling instrument is placed *in the room itself*, since it is the room condition which must be controlled.

This system of control (the dual system, one instrument controlling vapor content and a second instrument controlling temperature) is known as the Carrier Dew-Point Control.

There are several other arrangements for control, for special purposes, but the principles involved are substantially the same.

A dehumidifier, for removing part of the moisture contained in the air, is exactly like a humidifier in general construction, but may contain more than one bank of sprays. The temperature of the water (which must be cooled in this case) is controlled by means of ammonia refrigeration or by the admixture of cold water from any natural source, such as well or lake.

Bearing in mind that *both* vapor and temperature affect relative humidity, it is easy to understand why the relative humidity of outdoor air is constantly varying. Outdoor relative humidity is usually *higher* in the morning than at night, because the temperature is then *lowest*.



A Conditioning Machine (Humidifier) with Side Casing Removed to Show Arrangement of the Interior

Indoor relative humidity can be mechanically regulated *every* day, morning, noon or night, by the installation of properly designed air conditioning equipment.

The other two factors, cleanliness and effective distribution of the air after its temperature and relative humidity have been fixed in the conditioning machine—are of equal importance—both industrially and from the standpoint of human efficiency. The cleansing or washing of the air is accomplished, in modern conditioning machines, by the same water-spray, which regulates the moisture content, since all of the air is brought into intimate contact with the spray. In addition, however, the air is baffled over the wet surfaces of scrubber plates, which remove practically all of the solid or gaseous (if soluble) impurities. A modern conditioning machine will even remove the bacteriological contaminations (the germs of mold, decay or disease).

The effective distribution of the cleansed and conditioned air is a factor of the greatest importance, since upon this depends the efficiency of the whole system. So much has been learned and so many methods perfected, that we cannot dis-

Interior of Typical Ejector Rubber Dryer Showing Nozzles and Washed Sheets on Trays

cuss distribution here. Suffice it that ways and means have been developed which can be adapted to meet any requirement.

The most notable of these is known as the ejector system of distribution. In this system high velocity jets of air from carefully designed nozzles, are directed into the room in such a manner that a secondary movement of the air *within the room* is induced by the ejector effect of the jets. In operation within a dryer, for instance, the ejector system will vigorously circulate, within the dryer, from three to five times the volume of air actually delivered through the nozzles. Since only that air which is entering through the nozzles must pass through the conditioning equipment, it follows that the conditioning equipment need be but from one-fifth to one-third the size which would be required with other methods of air distribution, affording the same effective air movement within the dryer. For this reason the ejector system has proven a factor of the greatest importance in connection with conditioned air drying, enabling dryers to be designed for maximum possible efficiency, within a reasonable initial and operating cost. Before the development of the ejector system most engineers were compelled to design drying equipment with a chief regard to the maximum allowable initial cost, rather than with sole regard to maximum possible efficiency.

Four Factors Involved

Today, each of the four factors involved in manufactured weather has been studied until the science of air conditioning has become as developed and exact as steam or electrical engineering—and mechanical equipment for manufacturing weather is as highly perfected as the steam or electrical prime movers of the most modern types.

We have deliberately devoted the greater part of our opportunity to an exposition of modern air conditioning, rather than to a specific dissertation upon its application to the rubber industry. We were led to this because, although air conditioning is already established as a vitally important ally in the rubber industry, we feel that, once familiar with the principles of air conditioning, the rubber engineer can readily perceive its possibilities as related to his own specific requirements.

The modern conditioned air dryer, utilizing the ejector system, will dry washed sheets in from 12 to 20 hours, depending upon the method of loading which is most efficient for a given plant, i.e., two loadings per day or one.

Such a dryer will improve rather than impair the physical

qualities of the stock, as determined from tests made by one of the largest rubber manufacturers in the world—the tests being made in their own laboratory, under the supervision of their own chief chemist.

Whatever drying schedule is established becomes a fixed, unvarying cycle, so that plant routine can be definitely arranged accordingly.

The overall cost of drying washed sheets with the ejector system is less than with any other system known.

The operation of the system is entirely automatic, so that no skilled attention is required. Since the kiln can be as quickly cooled as heated, the workmen are not exposed to unpleasant conditions and labor is easily secured and retained.

The wet rubber is exposed to air at the most favorable conditions of temperature and relative humidity, and the drying is accomplished at normal atmospheric pressure, plus the very slight static fan pressure. The rubber is therefore dried under natural conditions, which improves its quality.

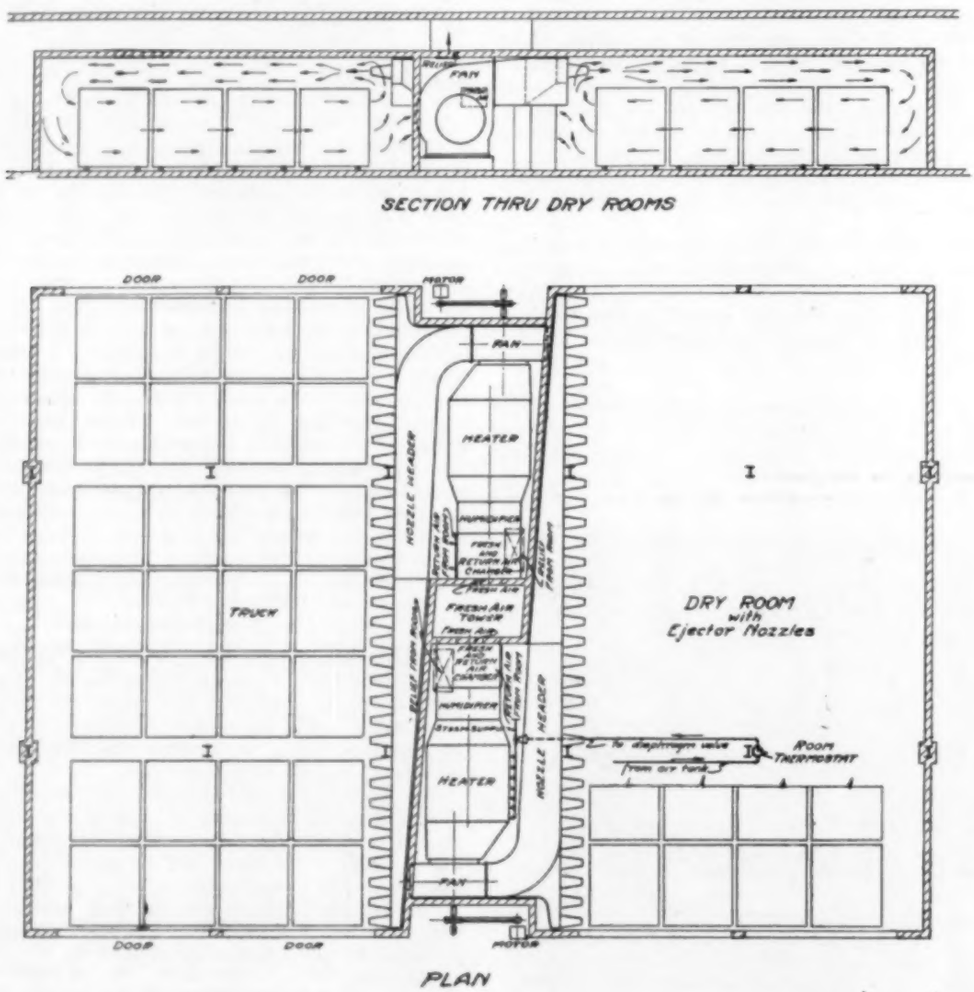
The operation of the system being entirely automatic, the results obtained are uniform, day in and day out, regardless of season. This is of the utmost importance, since it eliminates the necessity of inspecting to remove improperly dried sheets. Every sheet is thoroughly and uniformly dry—ready to go to the mills as soon as it leaves the dryer. The final moisture content can be exactly regulated to the value desired. Accurately *controlled* drying of this nature means, of course, greater efficiency in every subsequent operation—especially in vulcanizing.

In the dipping room, the difficulties arising from unfavorable atmospheric conditions are familiar to every dipped goods manufacturer. Moisture condensation upon dipped forms, causing blisters, for instance, can be entirely obviated. The drying of the dipped piece can be expedited to one half of the time required without air conditioning, and the drying schedule can be made fixed and unvarying, summer or winter. Dust and insects, so disastrous to fine dipped goods, are eliminated in the conditioned dipping rooms. Static, the lurking danger in every dipping room, is impossible if air conditioning equipment is provided. And the conditioned dipping room is free from dangerous concentration of the volatile solvents evaporated from the solution.

Wherever cementing is done there is need for air conditioning. The evaporation of the solvent so lowers the temperature of the rubber surface that condensation will occur under certain atmospheric conditions, notably those of the summer. Such condensation either weakens the joint or, if the piece is later vulcanized, causes blisters. Air conditioning affords a positive, technical control of these factors.

Wherever the condensation of moisture upon the surface of the rubber causes difficulties, as in the booking department of the tire plant, for instance, air conditioning can be called upon to eliminate the trouble.

In any department of any rubber factory, in fact, wherever heat, humidity, cleanliness and air movement, affect the process, modern air conditioning engineers are ready to eliminate the difficulties by manufacturing weather to order.



A Twin Ejector System Designed for One of the Largest Rubber Manufacturers in Akron. The Arrows in the Elevation Show the Direction of the Air Currents from the Ejector Nozzles, and also the Method of Exhaust from the Kilns and Relief to the Atmosphere. The Twin System Permits Continuous Operation, One Kiln Being Unloaded and Reloaded While the Other is in Operation.

The Detection of Accelerators

By D. F. Twiss and G. Martin

The increasing extent to which organic substances are being used as accelerating agents in the commercial vulcanization of rubber calls for an important extension of the methods of analysis customarily applied today for the examination of compounded rubbers. Relatively little difficulty is encountered in the recognition of mineral accelerators of the old type, such as litharge, magnesia, and lime, an analysis of the residue obtained by incineration frequently supplying sufficient evidence of the character of the accelerator. What may be termed "pseudo organic" accelerators, typified by a solution of caustic soda in glycerol, are also fairly easily detected by standardized methods of analysis, the presence of the alkali metal being demonstrable by analysis of the ash or by careful aqueous extracts of the compounded rubber.

With the purely organic accelerators the matter is fraught with more difficulty. The proportion of organic accelerator used in a mixing is commonly quite small, in the neighborhood of one per cent, and is indeed sometimes less still. Hitherto there appears to have been no general scheme proposed for revealing the presence or the identity of the organic catalyst in vulcanized rubber.

Occurrence of Nitrogen

The point of greatest promise as a basis for the detection of the presence of an organic accelerator in a compounded rubber—whether vulcanized or not—appears to be the occurrence of the element nitrogen as a constituent common to the whole class. A direct determination of the percentage of nitrogen in compounded rubber, although admittedly of use in certain cases, is of no general value on account of the various forms in which this element may be introduced into rubber mixings. Not only is nitrogen already a constant constituent of the protein matter universally present in natural rubber, but the number of nitrogenous compounding ingredients is considerable. Glue is finding increased favor as a compounding ingredient, and large quantities are already used; leather dust and casein powder are also applied at least on occasion. Apart from this, there is the constant possibility of the unconscious introduction of nitrogenous substances as impurities in other compounding ingredients; a common but little suspected cause of such contamination lies in the frequent presence of ammonium sulphate, sometimes, in very considerable proportions, in lampblack.

On the above grounds, it is clear that the detection of the presence of an organic accelerator merely by the estimation of the nitrogen content of the suspected rubber mixing is barely feasible. On an earlier occasion an opportunity occurred for indicating a method of avoiding the complications introduced by the presence of nitrogenous fillers in compounded rubbers (Twiss and Brazier, J. Soc. Chem. Ind., 1920, 39, 125T, footnote). Whereas nitrogenous fillers generally refuse to yield their nitrogen to acetone, the organic accelerators are all more or less soluble in this solvent; if, therefore, an organic accelerator is present the soluble matter removed by extraction with acetone will exhibit an abnormally high nitrogen content.

Rubber Fairly Uniform

It is fortunate that the largely preponderating bulk of raw rubber today emanates from the Hevea tree, and when clean and dry, has a fairly uniform elementary composition. In such rubber the nitrogen ranges from 0.3 to 0.6 per cent (J. Grantham, Agric. Bull., F.M.S., 1915, 4, 1; A. van Rossem, Comm, Netherland Govt. Inst. for Advising Rubber Trade, 1917, II, 54 and 55), but in the acetone extract of such rubber the amount, calculated as the original weight of the rubber, is much less. We have found 0.03 per cent of nitrogen in the acetone extract from Hevea pale crepe, while van Rossem (loc. cit.) for three samples of Hevea plantation rubber obtained values between 0.01 and 0.05, the mean being 0.03 per cent. With the now less common wild rubbers also the figures are generally quite low and insufficient to invalidate the following suggested method of examination:—

Procedure

Two grams of the rubber "compound" are extracted in the usual manner for several hours with acetone. If aldehyde-ammonia is suspected the addition of a few drops of N/$_{10}$ hydrochloric acid to the acetone is advantageous.

The residue obtained after the removal of the acetone from the solution is dried, and its nitrogen content determined by the Kjeldahl method, using N/30 acid and sodium hydroxide respectively for the absorption of the ammonia and the titration of the excess acid.[1] If the percentage of acetone-soluble nitrogen calculated on the original material exceeds 0.05 per cent, it is considered that there is evidence of the probable presence of an organic accelerator.

As a general rule, before recourse need be made to this procedure, indications of the presence of an organic catalyst should have been forthcoming from the results of the more usual methods of examination, e.g., from an abnormal relationship between the physical characteristics (taking into consideration the effect of the ordinary compounding ingredients) and the degree of vulcanization.

As the content of nitrogen in an organic accelerator usually ranges from approximately 12 to 25 per cent (hexamethylenetetramine exceeds these limits), it might at first be expected that the acetone-soluble nitrogen should give a direct and fairly trustworthy indication of the approximate amount of the accelerator used, and that this calculation could be made still more definite by an actual identification of the accelerator present. Such expectation, however, is not fulfilled. The identification of the accelerator after vulcanization is often a matter of considerable difficulty. It is well-known that the nitrogenous accelerators under consideration undergo more or less complete alteration during the vulcanization process; thus it is a matter of practical experience that the irritant nature of mixings containing hexamethylenetetramine disappears on vulcanization and that the physiological effect of a thiocarbanilide mixing is greatest immediately after vulcanization. In both these, as in other cases, the accelerator undergoes conversion into reaction products which are at least partly volatile.

Immediate Examination Desirable

For the identification of the accelerator it is consequently desirable that the sample should be examined as soon as possible after vulcanization. Under such conditions, indeed, it may be possible at a freshly-cut surface to recognize the odor characteristic of certain types of accelerator, such as thiocarbanilide and its analogues; aldehyde-ammonia and hexamethylenetetramine are also known to impart characteristic odors to newly-vulcanized rubber; similarly vulcanized *p*-phenylenediamine mixings tend to develop a characteristic dark surface coloration. If the sample is an old one with a relatively large surface it is possible that a considerable loss of "accelerator nitrogen" may have occurred by evaporation of the accelerator or its decomposition products. Examination by the above-described method can therefore only give qualitative results; any calculation as to the original proportion of accelerator, especially when, as is commonly the case, a considerable period has elapsed since vulcanization of the sample, is little trustworthy and at the best only roughly approximate.

As in addition to ascertaining the presence of an accelerator it is of interest to know its nature, further investigation will frequently be desired.

Paper read at the International Rubber Conference, London.

[1] On account of the small quantities of nitrogen in question it is necessary to perform a blank experiment concurrently, and to ensure that the distilled water used possesses no perceptible acid or alkaline reaction.

The following outlined scheme is tentatively suggested for this purpose, after the presence of an accelerator has been indicated by the above-described method:—

1. Accelerators of the nitroso-class impart a characteristic color to the acetone extract; thus, a rubber containing *p*-nitrosodimethylaniline, the commonest example of this type, gives a striking yellow to deep brown acetone extract, the depth of color varying with the quantity present. (a) If *p*-nitrosodimethylaniline is present, a direct acidic extract as obtained in 3 (below) or the solution obtained from the above-dried acetone extract (1), when treated successively with a little hydrogen sulphide water and ferric chloride solution, develops a marked blue (or greenish blue) coloration; this is owing to the formation, during vulcanization, of a little *p*-aminodimethylaniline, which under the conditions specified is converted into "methylene blue".

Examining for Alkaloids

Another indication of *p*-nitrosodimethylaniline is observable in the color of the preceding hydrochloric acid solution, which is yellow but changes color distinctly when rendered alkaline by sodium hydroxide, and then yields its color to ether when shaken with a little of this solvent. (b) A further general test for the nitroso accelerators is to treat the hydrochloric acid solution of the dried acetone extract with a fragment of metallic zinc for a few minutes; the nitroso-compound is thereby reduced to a primary aromatic amine which can be detected by the diazo-reaction described in 3 c. If the accelerator is *p*-nitrosodimethylaniline the reduced solution also exhibits a marked methylene blue reaction.

2. Extract a comminuted sample with water for an hour and test the extract with a sensitive reagent for ammonia. If Nessler's solution is used, a comparative "blank" experiment should be made concurrently. A positive result indicates the original presence of aldehydeammonia, or hexamethylenetetramine, or possibly one of the accelerators mentioned in 3 a.

3. Boil a comminuted sample (if possible, at least 5 grams) with diluted hydrochloric acid (1;2) for several hours under a reflux condenser. Cool and filter.

(a) Distil part of the acid extract with sodium hydroxide solution and examine the distillate for ammonia (and volatile organic amines) as in 2. A positive result indicates, in addition to the accelerators mentioned in 1, furfuramide, hydrobenzamide, alkylamine, and alkylammonium dithiocarbamate accelerators, and also urea derivatives of various possible types.

(b) Observe carefully the odor of the warm acidic extract; accelerators of the thiocarbanilide type yield a characteristic smell of a "mustard oil", thiocarbanilide itself yielding phenyl mustard oil (phenyl isothiocyanate).

(c) Diazotise a little of the well-cooled acid solution obtained under 3 by the addition of a little cold dilute aqueous solution of sodium nitrite. After a few minutes pour a little of this mixture into a solution of β-naphthol in excess of aqueous sodium hydroxide. A marked red precipitate or coloration demonstrates the presence of a primary aromatic amine indicative of the original presence of free aromatic base such as aniline and toluidene, *p*-phenylenediamine, etc., or of derivatives of such bases, e.g., with aldehydes (common examples being anhydroformaldehydeaniline or "formaniline," methyleneaniline, and benzylideneaniline, and with carbon disulphide (the thiocarbanilide type), and of yet more complex nature as triphenylguanidine.

Test for Nitroso Accelerators

4. If the results of the preceding tests are all negative, examine the acid extract for an alkaloid; for this purpose it is advisable to evaporate the extract to dryness, and, after redissolving in a few drops of water, to apply suitable tests, e.g., the potassium iodide test for quinidine, which is a characteristic constituent of the commercial "quinoidine" (Thorpe's Dictionary, V, 670).

The chief difficulty in such a scheme in all probability would be the detection and identification of accelerators of the dithiocarbamate class, derived from alkylamines by the action of carbon disulphide. These are exceptionally powerful catalysts, particularly if present in conjunction with zinc oxide, and are consequently applicable in much smaller proportion than the majority of accelerators drawn from the aromatic group, and are also liable to loss by evaporation. A suspicion of their presence, however, would commonly be imparted by the existence of exceptional physical characteristics relative to the chemical evidence forthcoming for the analytical composition.

The foregoing scheme is acknowledgably incomplete, but is at least suggestive, and obviously capable of extension in order to obtain confirmatory evidence of the presence of one of the types named or to cover a wider range.

Indeed, such a scheme could easily be extended to cover the detection and identification of the whole of the known organic accelerators whether present in rubber or in the "pure" state. For exhaustive examination, particularly for the complete investigation of the accelerators as offered for sale, all that is required is a detailed scheme for the analysis of nitrogenous organic substances generally based on the methods of practical organic chemistry. The main obstacle likely to be encountered in such examination is a low degree of purity and lack of homogeneity in the commercial products, especially crude complex mixtures prepared by heating together organic bases with sulphur, as recommended by some workers in this field.

Devulcanizing Rubber with Oxalic Acid

A patent, U. S. Patent No. 1,382,669, has been granted to W. B. Pratt and assigned to Rondout Rubber Co., which deals with a process for devulcanizing rubber by means of oxalic acid or other organic dibasic acids. The inventor claims to be the first to succeed in removing the combined sulphur from vulcanized rubber without injuring the rubber itself, so that it is recovered in a state almost the same as the original as far as its physical and chemical properties are concerned. The treatment with oxalic acid does not burn the rubber as when sulphuric acid is used to decompose the rubber sulphur complex, and neither does it have the mere superficial solvent action of acetone, which just dissolves out the uncombined sulphur. The acid actually decomposes the vulcanized rubber molecule, but yields a rubber thereby, which has all the advantageous properties of the original crude rubber. The process can be applied not only to all forms of vulcanized rubber, such as tires, fabrics, rubber boots and shoes, etc., containing various fillers, resins, asphalts, cellulose fibers, litharge, etc. etc., but it can also be used in counteracting oxidation and overvulcanization.

The principle on which the process is based is to desulphurize the rubber under the same conditions of temperature and duration of time that the original vulcanization operation was conducted at. It appears that at the temperature of vulcanization, from 120 to 160 degrees C, the sulphur assumes a quasi-colloidal state, and it is in that state that is combines with the rubber molecule. Then when the vulcanized rubber is heated to that temperature in the presence of oxalic acid, a chemical reaction takes place which results in the desulphurization of the rubber. The concentration of the acid solution used is a direct measure of the time that it takes to effect complete desulphurization.

The quantity of oxalic acid used must be sufficient to abstract the free and combined sulphur in the rubber and there must still be an excess of the acid presence, so as to prevent the revulcanization of the rubber. As each commercial rubber article contains a different percentage of sulphur, the rubber must first be analyzed to ascertain the same and the proper quantity of the aqueous solution of the acid used.

Various dibasic organic acids soluble in water have been used but the best results were obtained with oxalic acid. An additional advantage in the use of oxalic acid is that it acts on the cellulose fibres used in conjunction with the rubber and makes them friable so that they can be washed out mechanically.

Col. Samuel P. Colt Passes Away

Colonel Samuel Pomeroy Colt, chairman of the board of the United States Rubber Company, died at his Bristol, R. I., home on the afternoon of Saturday, August 13, his death following a severe paralytic shock which he suffered a few days before.

Colonel Colt had been sinking fast for the past twenty-four hours, and early on August 13 it became apparent that the end was near. He was unconscious for several hours before he died. United States Senator Le Baron B. Colt, a brother of Colonel Colt, was at the bedside, together with the Colonel's two sons, Roswell C. and Russell G. Colt, and other relatives.

Col. Colt was born at Paterson, N. J., January 10, 1852, son of Christopher and Theodora Goujaud De Wolf Colt. His father, Christopher Colt, a manufacturer, was born at Hartford, Conn., March 2, 1812, and died there May 25, 1855. Theodora Goujaud De Wolf was the daughter of General George De Wolf. He was of the seventh generation from his earliest paternal American ancestor, John Colt, who resided in Colchester, England, and who came to this country in the company of the Rev. Dr. Thomas Hooker in 1636, first settling in Dorchester, Mass., where he became a part of the Massachusetts Colony, from which place he moved to Hartford, Conn. in 1638.

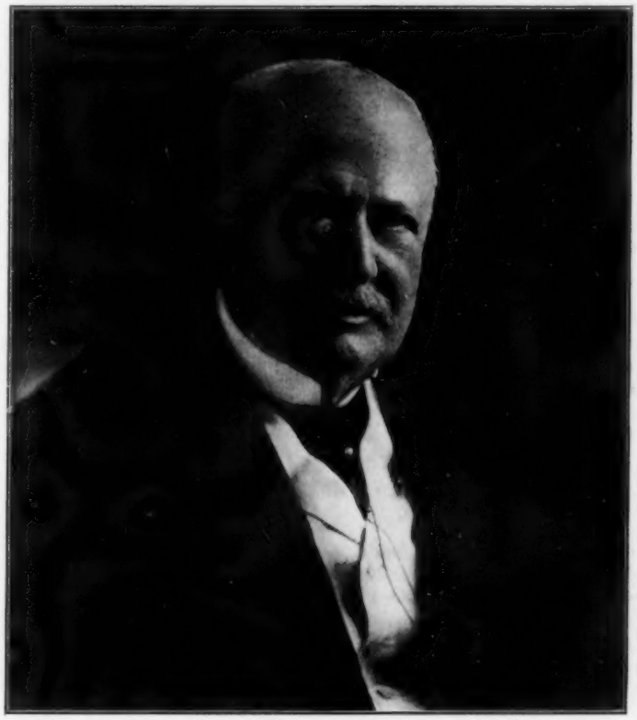
A brother of Col. Colt is Le Baron Bradford Colt, member of the Senate of the United States 1913-1925.

Distinguished Ancestry

In the "Historic Families of America", edited by Walter W. Spooner, vol. 2, New York, 1907, pp. 71 seq., we read: "John Colt, ancestor of the Colt family of America, sprang from the Colts 'of the ilk' of Perthshire, Scotland, descendants of Thomas Colt or Coutts, who in 1496 had a charter of lands in Perthshire, and who according to the family MSS. was a son of Thomas de Coult of Auchtercoul, Aberdeenshire. At the latter place the Colt family held the barony of Auchtercoul". By authentic historical records the lineage of the family of Colt is traceable to a very ancient period in both England and Scotland. On the maternal side Samuel Pomeroy Colt was a grand-nephew of James De Wolf, United States Senator from Rhode Island 1821-1825, and his great-grandfather, Governor William Bradford, United States Senator from Rhode Island 1793-1797, was of the sixth generation from William Bradford, second Governor of Plymouth Colony who came over in the Mayflower.

A family which numbers in the more remote ancestral lines so many persons of distinction had the good fortune to include also in more recent years Samuel Colt (born in Hartford July 19, 1814; died there January 10, 1862) one of the famous 19th century inventors. That gentleman, an uncle of Samuel P. Colt, invented the revolver which bears his name, and which was described at the time as a "pistol with a rotative cylinder containing six chambers discharging through a single barrel". He invented also a submarine battery for the defence of harbors against naval attacks, and was the first to design and test the submarine telegraph-cable. From 1847 the career of the inventor of "Colt's Revolver" was successful in a degree hardly paralled in the history of American industrial enterprise; for almost instantaneously, as it seemed, the demands for his revolver became world-wide, and he built at Hartford the largest and best equipped private armory that could be found at that time in the world.

Samuel Pomeroy Colt received his early education in New Hartford and Hartford, Conn., and at Anthon's Grammar School, New York. Afterward he attended the Mass. Institute of Technology, from 1870 to 1873. After a year's travel in Europe he entered in 1874 the Columbia Law School, graduating therefrom in the Spring of 1876 with the degree of L.L.B. He was admitted to the New York Bar in May, 1876 and to the Rhode Island Bar in January, 1877. In 1876 he was elected a member of the General Assembly of Rhode Island, and served until 1879. He was an aide-de-camp of Governor Henry Lippitt of Rhode Island, with the rank of Colonel, 1875-1877; Assistant Attorney General of Rhode Island 1879-1881 Attorney General of Rhode Island 1882-1885. He was one of a committee of fifteen appointed to revise the constitution of Rhode Island. From the year 1877 until 1887 he was engaged in the practice of law at Providence. In the year last mentioned, 1887, he founded the Industrial Trust Company of Providence and was its President from 1887 until 1908, at which time he became Chairman of its Board. In 1888 he re-organized the National India Rubber Company of Bristol, and became its president. In 1901 he was elected president of the United States Rubber Company, of which company he was a director and member



Col. Samuel Pomeroy Colt

of the executive committee from its organization in 1892 to the time of his death. In December 1918 he resigned from the presidency of the United States Rubber Company, and at the same time was elected chairman of its board of directors. As a director and in other official capacities he was connected with many other important corporations.

Colonel Colt was a member of St. Michael's Episcopal Church, Bristol, R. I., and also an attendant of St. Thomas' Church, New York City. He was a member of the American Geographical Society of New York; the Metropolitan Museum of Art; the New York Botanical Gardens; the Rhode Island Historical Society; the Metropolitan, Athletic and Republican Clubs of New York City; and the Hopes, Squantum, University, Anawan and Country Clubs of Rhode Island. His interest in the fine arts has led to the acquisition of five works of the great French sculptor, Rodin. These are "The Lion in Agony", "Eve", Psyche", "The Hawk and the Dove", and "The Hand of God".

He was married at Bristol, R. I., to Miss Elizabeth M. Bullock on January 12, 1881. Mrs. Colt is a daughter of Hon. J. Russell Bullock, who served Rhode Island as Judge of its Supreme Court, and the United States as Judge of the District Court of Rhode Island. They have had three children; Samuel Pomeroy (deceased), Russell Griswold and Roswell Christopher.

ABSTRACTS

Technical — General — Commercial

Recovering Rubber and Fibers from Rubber Fabric

British Patent No. 147,628 treats of a process for recovering caoutchouc and the textile fibers from rubber fabric. Old rubber tires in coarse fragments are heated below 180 degress C in a closed vessel under pressure with a solvent such as petroleum, ether, benzene, toluene, ether and the like. At the same time they are subjected to mechanical treatment such as kneading, rubbing or beating. The rubber is recovered from the solution by evaporation and the textile fabric which is washed some more with fresh solvent can be used in the manufacture of paper.

Black Rubber Composition

British Patent No. 164,159, issued to the Cambridge street Rubber Mills of Manchester, England, deals with the making of a black rubber mixture which does not contain any litharge. The composition is made from 22 lbs. of black solid rubber tire scrap, 10 lbs. of black rubber heel trimmings, either vulcanized or not, 3 lbs. of carbon black or other black pigment, 13 lbs. of magnesium oxide, ¼ lb. of sulphur, ¼ lb. of lime, 7 lbs. of reclaimed rubber, preferably red rubber, 4 lbs. of raw rubber and 2 lbs. of floating substitute. The composition is vulcanized in an ordinary press in 25 minutes with a 5 minutes blow. It is suited for making heels and soles.

Manufacturing Soft, Elastic and Extensible Rubber Articles

German patents Nos. 303, 984 and 305, 667, issued to Bayer and Company deal with the manufacture of elastic vulcanized rubber. The first patent describes the addition of 5 per cent or more of ammoniacal compounds, fatty or aromatic amines, their derivatives or salts. The second patent deals with the addition of sulphate of aniline and amines.

Viscous Doughs or Solutions of Vulcanized Rubber

A process of manufacturing viscous doughy masses or solutions of undeteriorated vulcanized rubber is described in British Patent No. 164,770. There are four methods of carrying out this process. The first is by heating a solution of raw rubber and sulphur in a solvent which has a boiling point above the temperature at which vulcanization normally takes place. The second is by the heating of a solution of rubber and sulphur in a solvent which has a lower boiling point than the temperature of normal vulcanization. The vulcanization is accomplished by heating the solution under pressure in a closed vessel. This is the preferred method and a solution of rubber in benzene (10 per cent of rubber) together with the addition of an accelerator is employed. The third method is by heating a slightly vulcanized rubber with a solvent in a closed vessel. The fourth and last method is by treating a solution of rubber with a limited quantity of a cold vulcanizing agent such as sulphur chloride with mastication. Any mineral or other filler may be added and the vulcanized product can be used in waterproofing fabrics.

Gutta Percha Insulator for Submarine Cables

German Patent No. 303,871, issued to Felten and Guilleaume, Carlswerk, A. G., treats of a process of working gutta percha whereby it is given certain advantages over untreated gutta-percha for use in insulating submarine telephone cables. The gutta percha is partly or entirely freed from resinous matters and is then mixed with natural or synthetic rubber.

Use of Phenolic Condensation Products in Automobile Tires

U. S. Patent No. 1,382,718 deals with the use of phenolic condensation products in the manufacture of tires. The bake lite products are caused to impregnate the fabric or other fibrous material which comprises the strengthening and puncture resisting elements of the tire and the latter are imbedded in the vulcanized rubber parts of the tire in the form of separate layers or disc in order to attain the proper flexibility or livliness in the same. These discs or layers may be made of a number of sheets of canvass or other fabric such as cloth, paper, etc. with which a considerable proportion of phenolic condensation cementing material such as bakelite, condensite, or redmanol varnish compositions has been incorporated. Metallic discs may be added as well to the structure of the tire.

In preparing the cloth, it is passed thru tanks containing the bakelite varnish, and then thru a tank containing pressure rolls where the excess varnish is squeezed out. The treated fabric is then dried at 150 to 175 degrees F. Enough of these sheets are combined to give a thickness of one-sixteenth to one eighth of an inch. The discs are punched out of these sheets and are cured by heating to 200 to 250 degrees F. only part of the curing is accomplished in this way, the rest being effected at the time of vulcanization.

Various forms of tires made with these impregnated fabrics are shown in the patent.

A Rubber and Granular Vulcanized Fiber Composition

A patent has been granted to A. Nixon of Manchester, England (see U. S. Patent No. 1,384,400) on an improved india rubber composition which can be used for a large number of purposes, as for instance in the manufacture of soles and heels for shoes and boots, of insulating pints, packing rings and washers and other electrical and mechanical devices.

In this process, vulcanized fiber in a ground shredded or other suitable form is incorporated with rubber, so as to give a composition containing 10 parts of rubber and 20 parts of ground or fine granulated vulcanized fiber. In preparing the composition, the necessary amount of sulphur to effect the vulcanization of the crude rubber is added and the entire mass is kneaded very thoroughly until a uniform composition is secured. The plastic mass is then rolled into sheets or otherwise shaped as required and vulcanized.

A Rubber Composition

In British Patent No. 164,006, there is described a rubber composition and a process for its manufacture. Resins are melted with calcium chloride and filtered to remove the impurities. About 10% of chloride of lime and 2½% of calcium chloride are added and the mixture is distilled. The distillate which comes over at about 160 to 180 degrees C is separated from that which is distilled at 340 degrees C. The latter oily distillate is redistilled with the addition of a small amount of chloride of lime (about 4 to 6%). In being distilled a third time the oil is chlorinated with 10 to 40% of chloride of lime, and to this product there is added one sixth part of regenerated rubber, which has been soaked in alcohol or ether to remove the tarry matters and other impurities. Instead of the regenerated rubber, one twelfth part of new rubber may be added to give the same result namely a pasty mass within 12 to 24 hours treatment. The oil from the second distillation is added to this mass and the whole is vulcanized in the usual manner. Synthetic rubber may be used as well in this process.

NEWS OF THE INDUSTRY

News -- Personals -- Financial -- Building Activities -- New Products

Tire Production at Akron

Firestone Makes Official Announcement that Production of More than 28,000 Tires Daily Has Been Reached—Goodyear Has Laid Off 900 Workers

Peak production of more than 28,000 tires per day has been reached by the Firestone Tire & Rubber Co., Akron, according to an official statement issued August 18. This compares with the peak production of April, 1920, when a maximum of 28,800 tires per day was reached. It is further stated that this production has been accomplished with 50 per cent of the number of employes engaged in 1920. Most Firestone departments are operating 18 hours per day and a few with 8-hour shifts.

The Goodyear Tire & Rubber Co. has laid off 900 factory workers, according to announcement by E. G. Wilmer, president of the company. No other change in the factory force or production is contemplated for August, it is said.

Reduction in the Goodyear force brought only a slight curtailment in production, it was pointed out. The Goodyear production ticket for the first half of August averaged 25,000 tires a day.

Akron companies are strengthening sales forces and report remarkable strides forward to the normalcy goal. The industry was among the first to show signs of recovery from the recent depression.

Rubber companies, like many others, are holding their production to actual orders on hand or promised for the near future. No large stocks are being carried either at the factories or at the main branches. Officials maintain these stocks at a point which will enable them to take care of normal business.

Factory Efficiency Improves

(Special Akron Correspondence)

One outstanding result of the recent depression was an outgrowth of real efficiency in factory, office and sales forces of the rubber companies in the Akron manufacturing district.

Through a reduction in personnel in all departments and an increased output from the employes remaining, the Akron companies are averaging three tires a day for each person on the payrolls. In the boom times, a rough estimate was one man for each tire made.

Nine of the larger Akron factories report 27,000 rubber workers are turning out 80,000 tires daily in comparison with 100,000 tires produced by 75,000 workers during the peak of employment.

Employment figures from Akron business bureaus show that the low ebb in the rubber industry was reached in December of last year when the nine factories employed only 18,500.

The peak of employment was reached when these same companies employed between 95,000 and 100,000 workers, including office forces.

F. A. Seiberling Again Active

(Special Akron Correspondence)

Frank A. Seiberling, who resigned as president of the Goodyear Tire & Rubber Co. under the refinancing program is again active in the tire industry.

His first step was the acquiring of the New Castle Rubber Co. at New Castle, Pa., at a receiver's sale and his refinancing and reorganization of that company as the Lehigh Tire & Rubber Co.

The plant resumed operations on August 15 after having been closed for several months. The factory has a capacity of 2,000 tires a day, but the initial output will be only 500.

H. W. Smith, general manager, made the announcement in New Castle that 100 men were employed on the first day that operations were resumed. He added that he intended to build up production to 500 casings and 1,000 tubes a day.

Mr. Seiberling, it is said, will have personal supervision of the New Castle company. Resumption at that factory, it is said, is his first step in his reported plan to amalgamate several rubber companies under one controlling office in Akron.

Several former Goodyear men who were associated with Mr. Seiberling in the development of the great East Akron factories, are now with the Lehigh company. One of them is Earl Davis of the Goodyear chemical and development department, who has become chief development engineer for Mr. Seiberling at the Lehigh plant.

Jordan Acquires Another Plant

Irwin Jordan, of the Jordan Tire & Rubber Co., Cleveland, has recently purchased the controlling interest in the Liberty Tire Corporation, of Carey, Ohio. At a meeting held August 12 the following directors were elected. Wesley Patterson, George Ash, J. F. Shuman, all well known Carey men, Francis Quinn, investment banker of Cleveland, L. C. Sturgis, formerly of the Firestone Tire & Rubber Co., and Irwin Jordan.

Mr. Jordan states that the plant is new, and in fine shape for immediate production. The machinery was installed by the Wellman-Seaver-Morgan Co., and is all of the latest type. The factory is located on a site of fifteen acres, is of three stories, concrete and glass construction, and is served by the Big Four, Hocking Valley and Northern Ohio railroads.

The company has a capital of $2,000,000, half of which is paid in, has no mortgaged indebtedness, is free from debt, and is well financed. Plenty of raw material, both rubber and fabric is on hand. The plant is now in operation turning out tires, both cord and fabric. Within two weeks Mr. Jordan expects to put the plant on a night and day basis, turning out 1,000 tires every twenty-four hours. Mr. Jordan states that practically the entire output is sold up to January 1, 1922.

The officers of the new company are M. E. Jordan, president, George Ash, treasurer, and Irwin Jordan, General Manager. Mr. Jordan will operate the Liberty Tire Corporation in addition to his other plants previously acquired.

McGraw to Increase Output

President John Morgan of the McGraw Tire & Rubber Company, East Palestine, Ohio, returned recently from an extensive trip through the central and western states and in an interview reported conditions as being very much improved among the distributors of the McGraw product.

Immediately upon his return, a conference was held for the purpose of increasing the factory daily production which will mean the addition to present factory pay roll of approximately 100 men.

Wuchter Heads Mid-West

A good attendance of manufacturers inspired enthusiasm at the regular monthly meeting of the Mid-West Rubber Manufacturers at the Chicago Athletic Association, Chicago, August 9.

The board of directors meeting and the usual 3 o'clock executive meeting were combined in one meeting at 10.30 a. m. to accommodate manufacturers who had made other arrangements for the afternoon.

The most important matters considered at the board meeting were the resignations of George B. Dryden, of the Dryden, Rubber Co., Chicago, who has been treasurer of the association for some time, and of D. M. Mason, of the Mason Tire & Rubber Company, Kent, Ohio, who has been president.

W. W. Wuchter, of the Nebraska Tire & Rubber Co., Omaha, was the unanimous

choice of the directors to fill the unexpired term of D. M. Mason and Mr. Wuchter was elected president.

There being no disposition to settle on a candidate to fill the vacancy of First Vice President, caused by the election of Mr. Wuchter as president, the question of a successor was postponed until next meeting.

The suggestion of C. L. Archer, of the Iowa Cord Tire Co., of Des Moines, Iowa, that rules governing grades of rubber be established and that a standing committee be appointed for the purpose of hearing cases, was laid over for consideration at a coming meeting. A number of interesting addresses were delivered after the luncheon.

Indian Tire's Receiver Files Report

(Special Trenton Correspondence)

Elgin G. McBurney, receiver of the Indian Tire & Rubber Company, New Brunswick, N. J., has filed a report showing total receipts of $48,037.92 and disbursements aggregating $23,376.14, leaving a balance of $24,661.75 available for the payments of allowances, costs, etc., and claims aggregating $129,083.10. The reports show that by litigation and otherwise claims aggregating $68,572.15 have been disallowed. Included in the disallowed claims is one of $36,000 filed by Adalbert Hauschild and Hugo Hennig, who claim to be creditors by reason of the breach of a contract entered into by the corporation to repurchase from them stock which they accepted as consideration for certain patents they had sold to the concern. Under the terms of the agreement, Hauschild and Hennig had a right to resell to the corporation the stock issued to them for their patents, but not before December, 1920. By that time the company had been in the hands of a receiver for a period of eighteen months. The filed claims were originally $200,000.

Receiver Appointed for B. & W.

(Special Akron Correspondence)

The receiver recently appointed for the B. & W. Rubber Co. of Akron has been discharged by Judge W. J. Ahern of Common Pleas Court on representation that the company is now in position to satisfy creditors.

Zee-Zee Files Petition

The Zee-Zee Rubber Company, manufacturers of automobile tires and tubes and doing business through a chain of stores in New York, the New England states, New Jersey and Pennsylvania, filed a petition in bankruptcy in the United States Court in Trenton, N. J., on August 6. The liabilities are scheduled at $293,552.19 and the assets at $434,964.57.

The general business depression in the particular line the company is engaged in is responsible for the failure, according to Herbert P. Backes, attorney for the corporation, who filed the petition. More than 1,000 creditors are listed. The plant of the company, at Yardville, a few miles south of Trenton, was built a few years ago and is valued at $392,000, according to the petition.

The concern ceased operating the plant August 1.

Rotary Tire May Be Taken Over

If negotiations pending for the past few weeks are successfully concluded as now seems assured, the Rotary Tire & Rubber Co's plant at Zanesville, Ohio, will be taken over by the Studebaker-Wulff Co., of Chicago, and will be placed in full operation just as soon as the necessary court order can be secured.

The company is now in the hands of a receiver, but the proposition made by the Studebaker-Wulff Co. is so attractive that it has been accepted by the directors and stockholders of the Rotary company and it is believed that all details of the transfer and the necessary re-financing of the concern can be concluded in a short time. If present plans mature this plant will be put in full operation.

Peter Studebaker, the senior member of the firm negotiating for the control of the concern is a son of Henry Studebaker of South Bend, Ind., and is thoroughly experienced in the automobile tire trade. Mr. Wulff was formerly with the United States Rubber Company and the Kelly-Springfield Tire Company as assistant general manager. Mr. Buchanan, another member of the firm who will be plant manager if the present deal goes through, is a former Kelly-Springfield man and has had seventeen years' actual experience in the rubber business. Other members of the organization, it is understood, are equally well qualified for their departments of work.

Interlocking May Dismiss Receiver

Conditional upon the subscription of approximately $20,000 by the stockholders of the Interlocking Tire & Rubber Co., Mogadore, Ohio, by August 30, Judge W. J. Ahren, Jr. ordered the discharge of Elihu Harpham, who he appointed receiver for the company last January.

At a meeting of the attorneys for the preferred creditors, stockholders, and receiver held on July 30 in Judge Ahren's office, each of these interested parties gave their consent to the plan which will return to the stockholders the control of their plant at Mogadore if they are successful in raising the funds necessary to satisfy the claims of the creditors and receiver. Already the stockholders have pledged $27,000 as a loan fund for the payment of creditors.

Fisk Reorganization Delayed

Lack of interest on the part of the stockholders of the Fisk Rubber Company toward the reorganization and recapitalization plan resulted in failure to declare these plans operative at the special meeting held in Chicopee Falls, Mass. August 9. The consent of seventy-five per cent of the preferred stockholders is necessary to consummate the deal, whereby the Fisk Company takes over the Federal Rubber Company and the Ninigret Company and acquires $10,000,000 of new money.

Notices are being sent to the stockholders, pointing out the necessity for immediate action and another meeting at which time it is hoped to put the deal through, will be held shortly.

Carbon Black Agitation Resumed

Warfare against carbon black factories operating in north Louisiana will be resumed when the Legistlature convenes in September, according to recent statements from responsible sources. The fight on the carbon companies is based on the ground that the use of natural gas in the manufacture of carbon black is an alleged waste of a valuable natural resource.

The carbon companies will, of course, resist any attempt to put them out of business and will be prepared for the row when it starts, says a special article in the New Orleans *Times-Picayune*. It is understood the carbon interests will be represented at Baton Rouge by a strong array of legal talent. Foremost among their legal representatives is former Governor Sanders, who has been retained as counsel.

Lined up against the carbon companies are several large industrial enterprises in the State who want the carbon factories closed because the industrials fear the enormous consumption of gas by the carbon mills will destroy the gas fields within a few years unless they are curbed. Affiliated with the industrials are large pipe line interests who wish to construct pipe lines to New Orleans and other consuming centers.

Tuscora Rubber Elects

Four new directors were elected at a meeting of the stockholders of the Tuscora Rubber Co. at New Philadelphia, Ohio, July 30.

The new members of the board are C. C. Frantz, A. L. Frantz, W. T. Holliday, all of Cleveland, and Charles A. Kolp, Canton. O. M. Dickinson, E. M. Blatz and E. E. Weber, the latter of Dover, were re-elected to the board.

N. J. Zinc Adds to Plant

The New Jersey Zinc Company has completed an addition to its lithopone plant which doubles the capacity compared with January 1, 1921. This is the second time that company has increased its facilities for producing lithopone within a year.

Kleinert to Erect New Building

The I. B. Kleinert Rubber Co., the well known manufactureres of dress shields, druggists' sundries, rubber coated cloth and dental gum, with main offices at 725 Broadway, New York, have arranged to erect an additional four-story factory building at their plant at College Point, L. I. at a cost of $225,000. It will be 75 by 150 feet in size and will be of reinforced concrete construction.

Personals of the Trade

Ajax Officials Honor Dayton—W. M. Gunlock's Business Career—De Vore Joins Culp Forces—Brownwell Joins Wildman—Items of Interest from Crude Rubber Trade

Ajax Officials Honor Dayton

Fred E. Dayton, vice-president of the Ajax Rubber Co., on retiring from that office recently, was given an Italian refectory table and bench by Chairman Horace De Lisser of the board of directors in behalf of many friends in the company. The 300 Ajax salesmen in the field and employes in the branch offices united to make the gift. The officers have given him a gold and silver cigarette case President J. C. Weston making the speech of presentation.

De Vore Joins Culp Forces

Weber de Vore has been elected secretary and acting treasurer of George K. Culp, Inc. to succeed William M. Sperry,

WEBER DE VORE

secretary, and C. C. Dobbs, treasurer. Mr. de Vore heads the financial and legal departments of the Culp organization, and will work out a plan of complete financial and legal protection for the Culp associated stores.

He has been associated with rubber activities in the East and Middle West in the past and more recently with a New York financial institution.

Brownwell Joins Wildman

C. A. Brownwell, for many years advertising manager of the Ford Motor Co., of Detroit, Mich., has been appointed vice president of the Wildman Rubber Co., of Bay City, Mich., and will be in charge of sales, distribution and advertising. He has recently returned from several months vacation in California. The Wildman plant at Bay City is now nearing completion.

Reynolds Leaves Rubber Corporation

Francis I. Reynolds, president of the Rubber Corporation of America, 240 West 55th street, New York, a tire selling organization, and vice-president of the Empire Tire & Rubber Corporation of Trenton, N. J., has resigned from both positions, his resignation taking effect on August 1. His plans have not yet been announced.

News from the Dayton Branches

H. K. Simmons, formerly New York Branch Manager for The Dayton Rubber Manufacturing Company, Dayton, Ohio, has taken over larger duties as Eastern District Manager, supervising and directing the activities of their Boston, Brooklyn and Philadelphia Branches.

H. P. Canniff, a salesman in their New York Branch, has been promoted to the position of New York Branch Manager, succeeding Mr. Simmons.

C. F. Faro, formerly branch manager, has been promoted to Chicago District Manager including supervision of the Kansas City and Denver branches.

George P. Colman, formerly special representative has been promoted to the position of Kansas City Branch Manager with a force of eleven salesmen.

J. H. Redfern, formerly with Goodyear Tire and Rubber Company, is now acting as special representative of The Dayton Rubber Manufacturing Company working out of Denver, Colorado, where they are planning the opening of a branch under Mr. Redfern's direction.

W. E. McCarthy, formerly sales manager of the Owen Tire and Rubber Company, has joined the Dayton sales organization in the capacity of Branch Manager at Los Angeles, California.

Numbered among the successful accounts Mr. McCarthy has been successful in lining up for Dayton products since his regime, are the Berg-Bryant Tire Company of San Francisco and Al. S. Monroe of Los Angeles.

This company has recently opened a new branch at Atlanta, Georgia, with Fred W. Gorman, formerly of the Brunswick Tire and Rubber Company, as manager. He has a force of seven salesmen.

C. K. Callaway, formerly connected with handling Brunswick tires at Chicago, now has charge of the Dayton Branch at Dallas, Texas, where warehouse arrangements have been made and a full stock of tires will be carried for the benefit of their Texas and Louisiana dealers.

C. S. Leslie's New Location

Charles S. Leslie, the crude rubber broker, announces his removal to Room 405, Importer & Traders Building, 24 Stone Street, New York. Telephone Broad 4810.

Wm. M. Gunlock's Business Career

Announcement has been recently made of the appointment of William M. Gunlock as vice-president in charge of the heel and sole departments of the Dryden Rubber Co., Chicago.

Mr. Gunlock is well known to the industry and has been identified with it for a number of years. He became identified with Morgan & Wright in September 1896 at which time he occupied a clerical position. He subsequently became assistant-manager and then manager of the mechanical goods department during which time many new lines of goods were developed and successfully placed upon the market. Among these were the Morgan & Wright heels, horse shoe pads, insulating tape, engineers and plumbers' supplies, dental goods and various lines of molded and wrapped goods specialties.

On January 1, 1911, he joined the forces of the Revere Rubber Co. and es-

WILLIAM M. GUNLOCK

tablished the Spring-Step Red Plug Heel on the market, followed subsequently by other brands and by Rinex and Uskide soles. His connection with the United States Rubber Co. had thus extended nearly twenty-five year. Mr. Gunlock is vice-chairman of the Rubber and Fiber Sole Manufacturers' Division of the Rubber Association of America and is also vice-president of the Rubber Heel Club of America.

Handy Going to Europe

John L. Handy, of the crude rubber firm of French & Handy, Inc., 347 Madison Avenue, New York, is planning to sail for London in September and may possibly visit Singapore before his return. He will be accompanied by Mrs. Handy.

Mrs. Alanson Work Passes Away

(Special Akron Correspondence)

Mrs. Etta W. Work, aged seventy-five years, widow of the late Alanson Work and mother of B. G. Work, president of the B. F. Goodrich Co., died at her Akron home August 14, following a long illness.

The Works have been prominent in Goodrich affairs for many years. Alanson Work was general superintendent and an associate of the late Dr. Benjamin Franklin Goodrich, founder of the company. B. G. Work has been president of the Goodrich Company since 1907, and has been connected with the company in different capacities during his entire business career.

Mrs. Work was a director of the company for fifteen years. She is survived by three sons, B. G. of New York, Gerald S. and Frederick of Akron; and two daughters, Mrs. W. F. Wilcox of Ithaca, N. Y., and Mrs. Effie W. Greer of Akron, wife of Dr. W. C. Greer, vice president of the Goodrich Co.

Goodyear Employees' Gift to Hospital

The employees of the Goodyear Tire & Rubber Co. recently contributed $2,021.53 to the Mary Day Nursery and Children's Hospital, Akron, as a remembrance to their former president Frank A. Seiberling and vice president Charles W. Seiberling. X-ray equipment was purchased with the gift.

Victor W. Fink Importing Rubber

An item was published in the August 10th issue of the RUBBER AGE to the effect that Victor W. Fink had entered the crude rubber brokerage business with offices at 24 Stone street. This should have read that he had entered the business as an importer and dealer in crude rubber.

W. Hammesfahr & Co. Removes

W. Hammesfahr & Co., crude rubber brokers, who have been located at 68 Broad street, New York, for over five years past, on August 15 removed to new quarters at 68 Beaver street. Their new telephone number is Bowling Green 9793.

Easley Kills Three Bears

William T. Easley of the crude rubber firm of French & Handy, Inc., has established his reputation as the Nimrod of the New York crude rubber market. On his recent hunting trip to Alaska he killed three brown bears which is the limit allowed by the Government for any one hunter to take.

Mr. Easley after serving for eight years as crude rubber buyer for the B. F. Goodrich Co. at Singapore has now become a member of the firm of French & Handy, Inc., 347 Madison Avenue, New York, in charge of their Foreign Department. The Goodrich crude rubber buying office in Singapore has been discontinued.

Oliver En Route for Singapore

J. William Oliver, of Oliver, Keeler & Scudder, crude rubber brokers, 24 Stone Street, New York, sailed from San Francisco on the steamer *Shingo Maru* en route for Singapore via Yokahama and Hong Kong. He will return by way of Colombo and London.

Dine Appointed Sales Manager of Madison

R. A. Low, president of the Madison Tire & Rubber Co., 20 West 60th street, New York, announces the appointment effective August 15 of Joe M. Dine as general sales manager in place of J. C. Matlack, resigned. Mr. Dine recently resigned as vice-president and general manager of The Oldfield Tire Co. to come with Madison. During the past fifteen years Mr. Dine has held important positions with two of the largest tire companies in Akron, and is thoroughly versed in every phase of the business.

J. M. DINE

Service of Crude Rubber Examiners Co.

The Crude Rubber Examiners Co. incorporated on March 1 last, is now located at 97 Water street, New York. Charles A. White, formerly with the old New York Commercial Co., and later with the Raw Products Co., is president and general manager of the new concern, and through his ten years experience in handling all grades of crude rubber as to quality and shipping is thoroughly well qualified to render manufacturers the kind of service they want. The firm will concentrate its efforts on giving superior service to manufacturers by having competent representatives examine their purchases of crude rubber either in warehouses or on the dock before shipment from New York.

W. B. Laighton Reviews European Conditions

William B. Laighton export sales manager for the Hood Rubber Co., Watertown, Mass., recently returned from a business trip abroad, and he reports that conditions in European countries are not good because of the unfavorable rate of exchange, but have shown a favorable tendency of late.

Mr. Laighton states that the work of rebuilding the destroyed parts of Belgium is remarkable, and that country has shown most decidedly the lead in restoration of business, agricultural work and general rebuilding after the War.

In the course of his business tour, on which he started about the first of May, Mr. Laighton visited the principal cities of England, Norway, Sweden, Denmark, Russia, France, Belgium and Germany. He viewed several of the battlefields in France, and he observed the general program of road and bridge rebuilding there.

Conditions are only fairly good in France and England because of the poor rate of exchange, and the advance in recovery from the war devastation is retarded on that account.

Mr. Laighton found that the foreign trade was quiet, but the indications pointed to an early improvement of conditions.

Receivers for the C. J. Bailey Co.

Receivers for the C. J. Bailey Co., Inc., dealers in rubber goods, Boston, Mass., were appointed in the United States Bankruptcy Court in Boston on August 12. This company was at one time one of the largest and best known rubber goods retail and jobbing establishments in New England. The firm was founded by the late Charles J. Bailey in 1889, and for many years occupied the store at 22 Boylston Street in the heart of Boston's retail business district. Mr. Bailey was known to almost everybody in the rubber trade on account of his many inventions in the rubber specialty line. The central location of his store near the Hotel Touraine and the genial welcome accorded all visitors made it a kind of mecca for members of the trade visiting Boston.

He was the inventor of a flesh brush which met with an extensive sale as well as many other rubber specialties. His most notable invention was the "Bailey Tread", a non-skid for automobile tires, which was made under license by nearly all of the tire manufacturers. He was a familiar figure at the outings and "smoke talks" of the New England Rubber Club in Boston and of its successor the Rubber Club of America. His death occurred April 27, 1918, after which the business was incorporated.

Norwalk Opens Warehouse at Boston

The Norwalk Tire & Rubber Co., Norwalk, Conn., has opened a warehouse at Boston which will operate under the name of the Norwalk Tire & Rubber Co., Inc., 150 Milk street, Boston. A complete stock of Norwalk tires and tubes will be carried.

Rubber Importations for July

Importations of crude rubber into the United States for July, 1921 show a slight falling off when compared to those for July, 1920. According to statistics recently issued by the Rubber Association of America the amount of crude rubber which entered this country in July, 1921, amounted to 11,692 tons as compared to 15,884 tons for the corresponding period in the preceeding year. Importations for the first seven months of 1921 ending July 31, totalled 90,404 tons, a reduction approaching fifty per cent when compared to the corresponding period in 1920 when importations amounted to 167,773 tons.

Following are the statistics in detail:

PLANTATIONS

From	Tons
Rotterdam	382
London	1,431
Malacca	244
Singapore	7,031
Colombo	766
Belawan-Deli	316
Sourabaya	320
Penang	535
Pt. Swettenham	115
	11,140

AFRICANS

From	Tons
Antwerp	27
	27

CENTRALS AND GUAYULE

Centrals (Mexico and Central America)	30
Guayule (Mexico	..
	30

PARAS

Manaos	186
Para	221
Itacoatiara	88
	495

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

	Tons
Waste	34
Balata	25
Miscellaneous Gums	189

COMPARISON 1920-1921

	July-1920	July-1921	Total importations seven months ending, July 31 1920	1921
Plantations	14,695	11,140	149,098	82,462
Paras	1,115	495	13,924	7,097
Africans	34	27	3,644	716
Centrals	40	30	590	68
Guayule	..	..	504	58
Manicoba and Matto Grosso	..	..	13	3
	15,884	11,692	167,773	90,404

ARRIVALS PLANTATIONS FOR JULY, 1921, SHOWING PORTS OF ORIGIN AND ARRIVAL

From	Arrived at	Tons
Singapore	New York	7,002
Singapore	Baltimore	29
Penang	New York	535
Sourabaya	New York	320
Rotterdam	New York	382
Colombo	New York	766
Malacca	New York	244
Belawan-Deli	New York	316
London	New York	1,431
Port Swettenham	New York	115
		11,140

ARRIVALS OF PLANTATIONS BY PORTS

Atlantic Ports	
New York	11,111
Baltimore	29
	11,140

Rubber Sales in Amsterdam

At an auction of rubber in Amsterdam on June 22 the demand was better than usual during the past two years, especially for "off latex" and "brown crepe." A less quantity was withdrawn than in recent former sales, though prices were very low. The quantity on offer was 403,525 kilos, of which 145,760 kilos were sold.

The prices paid ranged from 7½ Dutch cents (3 American) per half kilo (1.1 pounds) for Hevea scraps to 38¾ Dutch cents (15½ American) per half kilo for Hevea crêpe I standard.

The prices paid were generally slightly above the valuation placed on the rubber by the offerers. As a rule, when the bid was below the valuation the rubber was withdrawn.

The Coming Chemical Exposition

That the coming National Chemical Exposition—the seventh will be the greatest in the history of the chemical industry of the United States is no longer doubted. The show will be held in the Eighth Coast Artillery Armory, New York City, during the week of September 12, and every inch of space will be devoted to showing the progress of chemical research in America.

Thus far more than 400 exhibitors will have places in the exposition. Last year the total was 457, and before the books are closed for the 1921 show Fred W. Payne, who with Charles F. Roth is managing the exposition, expects that last years figures will be exceeded. It is certain that every branch of chemistry will be represented and that the public will be introduced to many new and important phases of chemical development.

Features of the Seventh National Exposition will be first the fact that all exhibits will be on one floor, and second that it will be the first time a suitable place for the symposiums and moving pictures has been secured. There is an auditorium in the armory that has been erected from theatre plans and the result is that there will be a stage giving adequate space for speakers and a screen, while the seating capacity of 1,400 is much greater than ever before. One of the drawbacks of the show in recent years has been the failure to secure proper accommodations for the hundreds who wanted to hear the scientific side of the industry discussed. Many addresses will be delivered. Of particular interest to the rubber industry will be the evaporating and drying program.. Some of the titles for the addresses being as follows:

E. G. Rippel, Buffalo Foundry & Machine Co.; A. E. Stacey, Jr., Carrier Engineering Corp., "The Relation of Atmospheric Conditions to Chemical Processes"; H. S. Landell, Proctor & Schwartz, "Drying and Drying Prablems"; Arthur B. Stonax, Hunter Dry Kiln Co., "Drying with Moist Air;" A. S. Lissauer, W. L. Fleisher & Co., Inc., "Drying as an Air Conditioning Problem;" J. D. Stein, Grinnell Co., Dryer Division, "Atmospheric Drying by Means of Compartment, Tunnell and Continuous Belt Conveyor Dryers with some Practical Applications;" H. H. Dickerson, Atomized Products Co., "Spray Drying."

A number of interesting innovations will also be held in connection with the exhibits.

Exports of Rubber Goods for May

Exports of rubber goods for June, 1921, showed a decrease when compared to the exports for May, 1921, according to the statistics recently compiled by the Bureau of Foreign and Domestic Commerce. The total value of rubber goods exported during June, exclusive of those to Porto Rico and Hawaii, amounted to $2,425,179 while the exports for May, 1921, exclusive of the same islands, totalled $3,063,310. Exports to Porto Rico and Hawaii for June were $191,130 while for May the total value amounted to $172,065.

The total value of the various articles exported during June, not including the islands, were as follows: belting, $118,327; hose, $76,542; packing, $35,979; boots, $29,227; shoes, $106,236; druggists' rubber sundries, $48,685; soles and heels, $30,483; auto tire casings, $758,518; inner tubes, $60,620; solid tires, $138,015; all other tires, $30,915; all other manufactures of rubber, $403,421; insulated wire and cables, $588,211.

Exports to Porto Rico and Hawaii for June were as follows: belting, hose and packing, $14,002; automobile tires, $148,341; all other tires, $2,001; all other manufactures of rubber, $26,786.

The Rubber Industry in Russia

Of the seven rubber factories which are located in Soviet Russia, only four have been working in the first quarter of the present year; the others are shut down. However, even these four plants have not been able to work continuously, because of the shortage of raw materials; they have had to shut down many times to wait until a new supply of coal arrived. This has resulted in a curtailment of production, so that only a very small part of the requirements of the country has been filled.

The following table, which is taken from the Russian journal entitled *Ekonomitscheskja Shisn* gives the production figures of various rubber articles for the first quarter of the year and also indicates the percentage production on the estimated program:

	Estimated Production	Actual Production	Percent
Rubber shoes—(rubbers)	750,000 pair	11,839 pair	1.6
Canvas or duck shoes with rubber soles and heels	550,000 "	9,569 "	1.7
Automobile—tires	25,500 pieces	2,443 pieces	9.6
Rubber Washers for Preserve Jars	600 pood	..	..
Belts	305,000 arschin	167,309 arschin	53.2
Rubber soles	39,759 pood	7,433 pood	18.6
Ebonite Plates.	675 pood	83 pood	12.3
Gas Holders	12 pieces	2 pieces	16.6

It is stated that the Russian Government will shortly make arrangements to import rubber in large quantities to fill its very pressing demands for rubber goods.

A pood is the equivalent of 36 lbs., while an arschin equals 28 inches.

Faultless "Wearever" Convention

The annual convention of the salesmen of the Faultless Rubber Co. was held at the plant at Ashland, Ohio, August 2, 4 and 5 with salesmen from all parts of the United States and Canada in attendance, and was voted one of the most successful gatherings this company had ever held. From the company's trademark "Wearever" it was known as the "Week's Wearever Convention".

T. W. Miller, president of the company, welcomed the salesmen and spoke on "Present Conditions of Trade".

W. H. Balch, vice president, and sales manager, in his opening address said that over $140,000 had been spent advertising Faultless products with the idea of putting them on the shelves of every drug store in the United States and Canada. He thought business had about touched the bottom and he looked for a gradual rise in volume and turn-over from now on. Many houses during the past year had made a profit with decreased business.

He questioned the wisdom of the policy pursued by some jobbers of adding new lines in depressed times with more or less fixed permanency in regard to their sales value. He thought they should stick to the staple lines for a larger volume of business. Later in the Convention Mr. Balch delivered an address on "Merchandising and Selling".

James H. Heron of New York, well-known as a speaker before Rotary Clubs, addressed the salesmen on the subjects "Selling" and "Sales Problems and How to Meet Them". I. L. Miller spoke on "Supplies" and H. S. Lett, advertising manager, on "Advertising Plans for 1921-22" and also on "Contracts and Discounts". C. C. Parlin, chief of the Research Division of the Curtis Publishing Co., Philadelphia, spoke on "The Production and Sale of Goods". G. A. Meiler, head of the export department of the Faultless Rubber Co., spoke on "Foreign Trade Conditions". Robert Repennig spoke on "Trade Topics", M. P. Gould on "Advertising" and C. D. Hubler on "Finance".

A picnic was held at the Myers bungalow at Spook's Hollow, seven miles east of Ashland, in the late afternoon and evening of the first day of the convention at which time there was a ball game and other sports. A box lunch was served. T. W. Miller opened the valve on a big gas well nearby and let it blow off for some minutes to the amazement of the picnickers.

Akron Standard Mold's New Lines

The Akron Standard Mold Co., manufacturers of rubber molds and rubber machinery, Akron, Ohio, has appointed S. E. Johnson as Eastern representative with headquarters at 154 Nassau street, New York.

The I. H. Dexter Co., Goshen, N. Y., has named the Akron Standard Mold Co. as its exclusive representative, which will add bead-wrapping, flap-making and curing machinery to the Akron Standard line of equipment.

J. D. Maguire to Represent Peachey Process

The Peachey Process Company, Ltd. of London, England, have delegated J. D. Maguire, president of the Maguire Rubber Company, New York, as their American representative, and arrangements are under way to form an American company to extend to manufacturers the rights to adopt this process under a license plan.

Considerable space has been devoted to Professor Peachey's discovery in the RUBBER AGE and other publications, and readers have evinced a great amount of interest in this new method of cold vulcanization which bids fair to have a far-reaching effect on the rubber industry.

Mr. Maguire recently spent considerable time at the experimental plant of the Peachey Process Company in London, and also attended the International Rubber Exhibition, London, and being so greatly impressed with the merit and adaptability of the Peachey Process, he entered into negotiations and secured their rights of representation for the United States. He will return to the United States about October.

An interesting collection of samples produced through this process has been received by the Maguire Rubber Company, 200 Fifth Avenue, New York, and those who have had the opportunity to examine them have been agreeably surprised. These samples consist of:

Rubber proofed fabrics in which aniline dyes and lake colors are used in all shades. This was impossible under the old method of vulcanization.

Re-constructed leather, both plain and embossed.

Embossed wall coverings compounded of wood meal and rubber.

Floor coverings of striking innovations made of wood meal and rubber, also cork dust and rubber.

New felt material.

Re-constructed sole leather and samples vividly demonstrating the adhesive properties of the new rubber solution.

Funeral of Col. Samuel P. Colt

The funeral of Col. Samuel P. Colt, whose obituary notice appears on page 381 of this magazine, was held at his residence, Linden Place, Bristol, R. I., on August 16, and was attended by hundreds of his friends and business associates including the Governor of Rhode Island.

The United States Rubber Co.'s main offices at 1790 Broadway, New York, were closed for the day, and most of the head officials of the company attended the funeral.

The funeral service was held at St. Michael's Church at 3 o'clock in the afternoon.

The bearers, selected because of their close business and personal association with Col. Colt were: Lester Leland, vice chairman of the board, United States Rubber Company; Charles B. Seger, president United States Rubber Company; Col. H. Martin Brown, president Industrial Trust Company; Col. Samuel M. Nicholson, vice president Industrial Trust Company; Hon. Henry F. Lippitt, former United States Senator from Rhode Island; Hon. William W. Douglas, former Chief Justice of the Supreme Court of Rhode Island; Walter S. Ballou, director of Industrial Trust Company; Hon. Ezra Dixon, director Industrial Trust Company.

Among the others from New York who attended the funeral were Homer E. Sawyer, vice president of the United States Rubber Co., James N. Gunn, president of the United States Tire Co.; Samuel Norris, secretary United States Rubber Company; W. G. Parsons, vice president United States Rubber Company; Wilson H. Blackwell, treasurer United States Rubber Company; J. D. Carberry, assistant secretary and treasurer, Uniter States Rubber Company; Ernest Hopkinson, vice president United States Rubber Company; F. V. Glynn, secretary to chairman of board of directors United States Rubber Company; William F. Bass, vice president General Rubber Company; H. Stuart Hotchkiss, president General Rubber Company; John W. Bicknell, treasurer United States Rubber Plantations, Inc.; James B. Sinnott of H. O. Horton Company.

By his will Col. Colt made $410,000 in public bequests of which $300,000 was to the town of Bristol and Bristol institutions, $50,000 to Brown University and $10,000 to the Massachusetts Institute of Technology, of which he was a graduate.

Advocates High Duty on A.E.F. Goods

Representative Graham of Illinois, on August 3 introduced in the House of Representatives a joint resolution levying a duty of ninety per cent against the importation of any American goods sent abroad as war supplies, sold to foreigners and resold in the United States. Originally Mr. Graham sought to fix the rate of 300 per cent, but has modified the figure and will ask the Ways and Means Committee to give its approval.

The resolution is intended to prevent resale in this country of war supplies sent abroad to the American Expeditionary Force or for use of the Allies and sold to foreign governments or individuals and attempted to be resold in this country. This resolution will be appreciated by the rubber industry in view of the recent importation of A.E.F. tires into this country.

British Control of Rubber

In discussing the British scheme for the control of the rubber market the London "Financial News" recently gave the following details:

"An important feature of the scheme is the co-operation of the Dutch interests, it being proposed that a similar corporation be formed simultaneously to embrace properties owned by such interests.

"The British and Dutch corporations will enter into an arrangement whereby conformity of action will be assured. It is absolutely essential that owners of at least 2,200,000 acres will take up shares.

MARKETS

Cottons, Yarns and Fabrics

NEW YORK, AUGUST 20, 1921

The cotton market was very active during the past fortnight and the end of July crop indications sent the prices to nearly the 14 cent level for December contracts or about 2 cents a pound above the low record of last June. The reports of increased activity in the domestic goods market and reports of increased production by some of the New England mills has tended to stimulate prices and added to this are innumerable complaints of all kinds and character, both as to weather and weevils, sent out from about every section as it suits the speculator.

Closing prices on the New York Cotton Exchange on August 19 were as follows:

	High.	Low.	close.
Aug.	12.65	.....	12.73@12.75
Sept.	12.80	.....	12.82@12.83
Oct.	13.09	12.91	13.02@13.03
Dec.	13.52	13.33	13.43@13.45
Jan.	13.60	13.41	13.52@13.53

EGYPTIAN COTTON

Egyptian cotton continues in an inactive condition. Uppers are quoted at 17½ cents per pound and Sakels at from 30 cents to 36 cents. Such shipments as are arriving from Alexandria are tag ends of the old crop, and traders are looking forward for the new crop in November to December. There is some talk of a shortage in this crop on account of a lack of sufficient water supply.

GERMAN-AMERICAN CONTRACTS

There has been no further talk about British importers buying in the south but there has been inquiry for cotton room for shipments to Germany. In this last connection it is interesting that advices from Frankfort-on-the-Main state that an agreement has been reached between the American Products Export and Import Corporation, an American concern, and the Darmstadter Bank, for the development of German-American cotton contracts. It is said that under the agreement the German consumer will be able to buy cotton directly in America and decide after the commodity has reached Germany whether he will pay down cash or have recourse to liberal credit under a guarantee offered by the Darmstadter Bank.

EXPORTS AND IMPORTS INCREASED

The detailed import and export statistics issued yesterday by the Bureau of Foreign and Domestic Commerce shows that cotton exports were practically the same during July as during June this year but were far below such exports during July last year. Cotton imports also showed an increase in July as compared with the preceding month.

BURLAPS

The burlap market continues to hold its improved sentiment. Prices advanced rather sharply last week due to exchange; some items going up 100 points. July shipments from Calcutta to the United States were smaller than they have been in months. The figures given were 50,000,000 yards to the east coast of the United States and 3,000,000 yards to the west coast, a total of 53,000,000 yards compared with a total of 64,000,000 yards shipped in June. It is believed that the reduced yardage that is coming to this and South American markets will mean further accumulation at Calcutta and perhaps warrant further mill curtailment.

DRILLS, SHEETINGS AND OSNABURGS

The market in drills during the two weeks has been quiet with no important price changes. Sheetings and Osnaburgs have been in good demand and the market looks better than it has been for some time, increases in price being recorded in practically every grade. There were few price changes in ducks with the market quiet.

STANDARDIZING DUCK

There was considerable interest in the trade in the preliminary conference between the department of Commerce and representatives of the Cotton Duck Association, held at the Bureau of Standards on Thursday, August 18. There were present at the conference: R. T. Fisher and F. R. McGowan of the textile division of the bureau; Harry L. Bailey of Wellington, Sears & Co.; Wallace L. Ball, of Mt. Vernon-Woodberry Mills; and C. F. Green, of Parker, Wilder & Co., also purchasing agents from various Government departments.

The conference was adjourned pending an investigation by the Bureau of Standards and the Association to determine whether or not duck specifications should be based upon the numbered ducks. It was understood that the specifications tentatively proposed by the bureau officials required minimum thread and minimum ply yarn rather than details of construction. At the present time each Government department has its own specification for cotton duck, which requires in most cases that the material must be made to order, as commercial grades do not properly conform to specifications. Under the proposed specifications commercial duck of an equal grade may be substituted.

CURRENT QUOTATIONS

Current quotations on the various fabrics used in the rubber industry are as follows:

TIRE FABRICS (Square Woven)			
17¼-ounce Sea Island, combed,	lb.	.85 @	.90
17¼-ounce Egyptian uppers, combed,	lb.	.65 @	.70
17¼-ounce Egyptian uppers, carded,	lb.	.60 @	.65
17¼-ounce Sakellarides, combed	lb.	.75 @	.80
17¼-ounce Sakellarides, carded,	lb.	— @	—
17½-ounce Peelers, combed,	lb.	.70 @	.75
17½-ounce Peelers, carded,	lb.	— @	—
CORD FABRICS			
Combed Sakellarides	lb.	.80 @	.85
Carded Sakellarides	lb.	.71 @	.76
Combed Peeler	lb.	.70 @	.75
Carded Peeler	lb.	.70 @	.75
Carded Arizona	lb.	.70 @	.75
Combed Egyptian uppers	lb.	.70 @	—
Carded Egyptian uppers	lb.	.65 @	—
DUCKS			
Belting (pound basis)	lb.	.25 @	—
Hose (pound basis)	lb.	.25 @	.26
*Enameling	lb.	.25 @	.30
Shoe Ducks	lb.	.28 @	.30
Single filling	yd.	.10 @	.13½
Double filling	yd.	.13 @	.14

*Price varies according to width.

DRILLS					
37-inch	3.25-yard	yd.	.06¾ @	.07¼
37-inch	2.75-yard	yd.	.08 @	.08¼
37-inch	3.00-yard	yd.	.07¼ @	.07½
37-inch	3.50-yard	yd.	.07 @	—
37-inch	3.95-yard	yd.	.06½ @	.07
OSNABURGS					
30-inch	7-ounce		.07 @	—
40-inch	7-ounce		.09 @	—
SHEETINGS					
40-inch	2.35-yard	yd.	.10½ @	.11
40-inch	2.50-yard	yd.	.09½ @	.10
40-inch	2.85-yard	yd.	.09 @	—
40-inch	3.15-yard	yd.	.10¼ @	.10½
40-inch	3.60-yard	yd.	.03¾ @	.09
40-inch	3.75-yard	yd.	.08¾ @	—
40-inch	4.25-yard	yd.	.06½ @	—

BURLAPS (Carload Lots)					
7 -ounce	40-inch	yd.	3.40 @	3.40
7½-ounce	40-inch		3.40 @	3.50
7¾-ounce	45-inch		4.25 @	3.60
8 -ounce	40-inch		3.50 @	3.75
10 -ounce	36-inch		4.15 @	3.40
10 -ounce	40-inch		4.30 @	5.50
10 -ounce	45-inch		5.25 @	6.10
10½-ounce	40-inch		4.35 @	5.60

ALEXANDRIA

Statistics for the week ending July 22, 1921

	ARRIVALS Cantars	EXPORTS (Bales) England	Con'nt	America	TOTAL EXPORTS Cantars	STOCK Cantars
This week	42,816	4,521	2,147	334	53,233	2,005,346
Same week 1920	3,933	238	164	3	2,974	624,837
" " 1919	——	11,700	4,123	2,275	132,187	2,084,532
Since Sept. 1, 1920	4,718,719	206,526	153,554	47,440	3,111,575	——
Same time 1919	5,564,777	332,028	129,994	250,459	5,382,940	——
" " 1918	4,739,184	330,552	120,899	60,059	3,761,452	——

Manufactured Rubber Goods

New York, August 20, 1921

The one outstanding feature of the rubber industry during the last two weeks has been the substantial strength displayed by tires in spite of a falling off in demand in some quarters. Business began to improve with the tire companies two months ago and the demand continued good ever since with no indications of the business falling back into the lifeless condition that prevailed previous to the present recovery. There were probably three contributing causes to the improvement in the tire industry. The reduction of prices was the first cause and next in importance was the continued fair and warm weather that prevailed while the other cause was the reduction in the price of gasoline and oil which helped to bring the cars out of the garages. The industry has improved to the extent that on the average factories are operating at about 70% capacity, some in fact at 100 per cent. There was general satisfaction at the report that came from Akron to-day that the Firestone Tire and Rubber Co. had reached peak production and official announcement was made that the company was now turning out 28,000 tires a day. It was further announced that in the opinion of the officials of the company the present basis of production would continue indefinitely.

MECHANICAL RUBBER GOODS

Business in mechanical goods is practically at a stand still. With the railroads adding no new equipment and making only the most necessary repairs, and mining operations generally discontinued, two of the most important sources of large trade are cut off almost entirely. Very little hose and belting is going to the railroads—just enough to meet pressing requirements. Marine specialties are moving slowly and the items for the dredging business are inactive as there is practically nothing being done except government work.

RUBBER CLOTHING

Some of the plants manufacturing raincoat fabrics and rubberized clothing that were closed down during the early summer have started up again in anticipation of good fall trade. This feeling has been encouraged by the improvement in the tire trade and the continued reports from banking circles that the change that has taken place in trade in general represents the turn in business and slow but continued improvement will be seen this fall. There is a good demand for cravenetted gabardines and coverts.

DRUGGISTS SUNDRIES

This department still continues inactive jobbers showing little interest in future deliveries and spot buying being restricted to covering current wants. There has been a good seasonable demand for such items as bathing caps and other bathing accessories; in fact the unusually favorable summer weather has made these lines more than usually strong. According to reports from some manufacturers stocks in general have been worked down pretty low and a good fall demand is expected. The demand for hard rubber specialties has been fairly good. Business in the west has been much better than in the eastern states.

Crude Rubber

New York, August 20, 1921

The mid-summer inactivity in the crude rubber market has continued during the past fortnight with prices in general showing a decrease of ¾c to 1c below those quoted in our last report dated August 5. Neither buyers nor sellers have shown any disposition to do business and with many of the important traders in the market away on vacations there has been little of note transpiring.

In general it may be said that importers and dealers who have stocks on hand are disinclined to release them at the low price levels prevailing and buyers are constantly looking for further concessions in view of the lack of demand.

One feature developed by recent operations in the market indicate that Latex grades are being more freely offered, with the result that they can be bought for only ¾c per pound more than Ribs. Latex generally is held about 2c per pound higher than Ribs. First Latex has been much favored by a good many manufacturers as being more suitable for their use and it is reported that some sizeable weights have been taken at recent figures.

A shortage of Rolled Brown Crepe is reported from Singapore and as a result this is about the only one of the Plantation Grages showing any stimulation in price.

South American grades have fallen off slightly in price, although holders are disinclined to do business in view of the belief that a shortage will be in evidence when demand among manufacturers really stiffens.

Current quotations on standard grades are as follows:

Plantations			
Smoked sheets, ribbed, spot	.13¾	@	.14
Sept.	.14¼	@	.14½
Oct.-Dec.	.14½	@	.14¾
Jan.-Mar.	.15¼	@	.15½
Jan.-June	.16	@	.16½
April-June	.17	@	.17¼
Smoked sheet plain, spot	.10¼	@	.10½
First latex pale crepe, spot	.14¾	@	.15
Sept. latex	.14¾	@	.15
Oct.-Dec. latex	.15½	@	.15¾
Amber crepe, No. 1	.13	@	.13¼
Amber crepe, No. 2	.12	@	.12¼
Amber crepe, No. 3	.10	@	.10¼
Grand Central crepe	.10	@	.10¼
Clean brown crepe	.11½	@	.11¾
Light clean brown crepe	.12	@	.12¼
Rolled brown crepe	.10¾	@	.11
Paras			
Up-river fine	.18	@	.18¼
Up-river medium	.14¾	@	—
Up-river coarse	.10	@	—
Islands fine	.17	@	.17¼
Islands coarse	.08	@	.09
Caucho ball	.10¼	@	.10½
Madeira fine	.22½	@	.23
Cameta	.07½	@	.08
Acre fine (shipment)	.18¼	@	.18½
Xingu Ball	.07½	@	.08
Tapajos fine, spot	.15	@	.15¼
Pontianac			
Prime	.11⅛	@	—
Bangermassin	.06¼	@	—
Palembang	.06¾	@	—
Gutta Siak, spot	.17	@	—

Reclaimed Rubber

New York, August 22, 1921

The reclaimed rubber industry continues to be affected by the extremely low price of crude rubber, but factories that produce special grades report fairly good business despite conditions. Prices are somewhat easier.

Quotations on this date are nominally as follows:

Standard Reclaims			
Floating	$.13	@	$.14
Friction	.13	@	.14
Mechanical	.08	@	.10
Hose	.10½	@	.11½
Tires, truck	.08	@	.09
Tires, auto	.09	@	.10
White	.13	@	.14

Scrap Rubber

New York, August 23, 1921

Scrap rubber dealers report that prices have fallen during the past month due rather to the large amounts of scrap that have come on the market than to any further lessening of demand on the part of the reclaimers. In fact, some of them claim that some reclaimers keep fairly busy in spite of the low prices of crude rubber, and that demand from the reclaiming industry in general shows a little improvement over conditions earlier in the summer.

Quotations prevailing in the New York market on this date are follows:

Auto tire peelings	.01⅛	@	.01⅜
Standard White auto	.01⅛	@	.01⅜
Mixed auto	.00⅝	@	.00¾
Bicycle tires	.00½	@	.00¾
Solid truck tires	.01	@	.01⅛
Boots and Shoes	.03	@	.03¼
Arctics, trimmed	.01⅝	@	.01¾
Arctics, untrimmed	.01⅛	@	.01¼
Inner tubes, No. 1	.04	@	.04½
Inner tubes, compounded	.02	@	.02¼
Battery jars, black compounded	Nominal		
Battery jars, No.1bright fracture	"		
Inner tubes, red	.02	@	.02⅜
Heels and pads	Nominal		
Black mixed	.00¼	@	—
Garden hose	.00½	@	—
Air brake hose	.00½	@	—
Red packing	.01½	@	.01¾
Red mixed rubber	.02	@	—
White mixed rubber	.01¾	@	—

American Rubber Patents

ISSUED JULY 26, 1921

1,385,383—To Melvon A. Marquette, Springfield, Mass., assignor to Fisk Rubber Co., Chicopee Falls, Mass. Reinforcement for tire beads.

1,385,518—To Michael Boylan, Omaha, Nebr. Vulcanizer.

1,385,591—To Roman Staflej, Detroit, Mich. Repairing device for bicycle tires.

1,385,612—To Charles G. Gerlach, Spokand, Wash. Emergency automobile-tire.

1,385,653—To Ottavio Zancan, New York, N. Y. Tire construction.

1,385,753—To Albert Remar, Maynard, Ohio. Tire armor and anti-skid device.

1,385,774—To George W. Bulley, St. Joseph, Mich. Bridge for inner tubes.

1,385,805—To John J. Voorhees, Jersey City, N. J. Material for producing patches for pneumatic tires and the like.

1,385,869—To Constantin Georgi, Berlin, Germany, assignor to Vandivere B. Moler, Yonkers, N. Y. Regeneration of oil or waste rubber.

1,385,890—To Seymour A. Rouse and Hans C. Stockel, Chicago, Ill. Armor-reliner for tires.

1,385,901—To Alfred Bucolo, Washington, D. C. Cushion-heel.

1,385,926—To Charles P. Salgee, Philadelphia, Pa. Anti-skid tire.

Chemicals and Compounding Materials

THE GENERAL MARKET—NEW YORK—AUGUST 20—A better feeling is noticeable in all divisions of the trade. This better sentiment has been steadily growing during the past two weeks. Inquiries in an increased volume have been coming into the market and there has been improvement in actual sales. Manufacturers report a marked expansion in the demand from jobbers. Consumers have increased their buying and although noticeably in small lots yet it points clearly to the sound improvement that is expected in the fall. Prices, it is true, have not as yet begun to respond, in any marked degree in anticipation of this improvement but have been well maintained during the mid-summer period.

ACCELERATORS

Organic

Aldehyde ammonia, crystals	lb.	$ .95	@ 1.00
Aniline oil, bulk basis	lb.	.20	@ .25
Excellerex	lb.	.55	@ .65
Formaldehyde-aniline	lb.	.60	@ .65
Hexamethylene-tetramine (powdered)	lb.	.95	@ 1.00
Paraphenylene-diamine	lb.	1.75	@ 2.00
Thiocarbanilid	lb.	.45	@ .65
Vulcocene	lb.	.35	@ ..

Inorganic

Lead, dry red, bbls.	lb.	.10	@ —
Lead, sublimed white	lb.	.07¼	@ .07½
white, basic carbonate	lb.	.07½	@ .08
Litharge, commercial, bbls.	lb.	.07½	@ .07¾
Lime, hydrated	lb.	.01½	@ .02½
Magnesia, calcined, extra light	lb.	.45	@ .55
heavy	lb.	.06	@ .06½
Magnesite, powdered	ton	50.00	@ 70.00

COLORS

Blacks

Bone, powdered	lb.	.06½	@ .08½
Carbon black	lb.	.10½	@ .20
Drop	lb.	.07½	@ .16
Ivory	lb.	.15	@ .45
Lampblack	lb.	.17	@ .45

Blues

Prussian	lb.	.50	@ .60
Ultramarine	lb.	.10	@ .35
Cobalt	lb.	.25	@ .30
Rubber maker's blue	lb.	3.50	@ ..

Browns

Iron oxide	lb.	.04	@ .06
Sienna, Italian, raw and burnt	lb.	.06	@ .12
Umber, Turkey, raw and burnt	lb.	.05½	@ .06½

Greens

Chrome, light, c. p.	lb.	.32	@ .34
medium	lb.	.34	@ .39
dark	lb.	.43	@ .46
oxide	lb.	.55	@ .65

Reds

Antimony, crimson sulfuret	lb.	.50	@ .55
red	lb.	.25	@ .28
golden	lb.	.25	@ .30
Indian, pure	lb.	.12	@ .17
oxide, copperas, pure	lb.	.13½	@ .15½
reduced	lb.	.11½	@ .12½
Para toner	100 lb.	1.40	@ —
Toluidine toner	lb.	2.75	@ —
Tuscan	lb.	.17½	@ .30
Venetian	lb.	.02½	@ .04½
Vermillion, English, quicksilver	lb.	.90	@ .95
domestic	lb.	.25	@ .30

Whites

Albalith	lb.	.07¼	@ .07½
Aluminum bronze	lb.	.60	@ .65
Lithopone, Beckton white	lb.	.07	@ .07½
Lithopone, domestic (factory)	lb.	.07	@ .07½
Zinc oxide, American Horse Head (factory)	lb.	.08¾	@ .09¾
Special	lb.	.08¼	@ .08½
XX red	lb.	.08¾	@ —
Zinc oxide, French process, White seal	lb.	.11	@ .11¼
Green seal	lb.	.10	@ .10¼
Red seal	lb.	.08¾	@ .09¼

Yellows

Cadmium sulphide	lb.	1.10	@ 1.35
Chrome, light, c. p.	lb.	.21	@ —
dark	lb.	.21	@ —
medium	lb.	.21	@ —
Ocher, French	lb.	.03½	@ .04
domestic strong	lb.	.03	@ .05
Zinc chromate	lb.	.37	@ .40

COMPOUNDING INGREDIENTS

Aluminum flake	ton	25.00	@ 32.00
hydrate	ton	22.00	@ 25.00
Ammonium carbonate, powdered	lb.	.07	@ .09
Barium dust	ton	100.00	@ —
Barytes, Southern off-color, f.o.b. mills	ton	20.00	@ 25.00
Western, prime white, f.o.b. mills	ton	28.00	@ 30.00
Basofor	lb.	.05	@ —
Beta-naphtol, technical	lb.	.40	@ —
Blanc fixe, dry, f.o.b. works	lb.	.04¼	@ —
Chalk, precipitated, extra light	lb.	.03½	@ .04¼
heavy	lb.	.02½	@ .03½
Clay, China, domestic	ton	7.50	@ 9.00
imported	ton	16.00	@ 24.00
Dixie	ton	22.00	@ 35.00
Blue Ridge	ton	22.00	@ 35.00
Fuller's Earth, powdered	ton	22.00	@ 25.00
Fossil flour	ton	60.00	@ ..
Glues, extra white	lb.	.30	@ .40
medium white	lb.	.24	@ .30
cabinet	lb.	.20	@ .35
cabinet low grade	lb.	.16	@ .18
common bone	lb.	.10	@ .16
Graphite flake, bbls.	lb.	.10	@ .12
powdered	lb.	.05	@ —
Ground glass, fine	lb.	.03½	@ .04
Infusorial earth, powdered	ton	60.00	@ —
bolted	ton	65.00	@ —
Liquid rubber	lb.	.15½	@ .16
bbls.	lb.	.07¼	@ —
Napthalene flakes	lb.	.07	@ .08
Rotten Stone	lb.	.02½	@ .04½
Silica (aluminum)	ton	25.00	@ 30.00
Soapstone, powdered	ton	15.00	@ 20.00
Starch, powdered corn	cwt.	2.61	@ —
Talc, domestic	ton	18.00	@ 20.00
French	ton	22.50	@ 30.00
French, high grade	ton	40.00	@ 45.00
Italian	ton	40.00	@ 45.00
Terra Alba, American No. 1	cwt.	1.85	@ 2.00
American No. 2	cwt.	1.25	@ ..
Tripoli	ton	25.00	@ —
Whiting, domestic	cwt.	.75	@ .80
Quaker	ton	13.00	@ 15.00
English chalk, commercial	cwt.	1.10	@ 1.20
glider's bolted	cwt.	1.20	@ 1.35
Paris white	cwt.	1.35	@ 1.50
Zinc Oxide— 10 per cent lead sulphate	lb.	.07	@ .07½
20 per cent lead sulphate	lb.	.07	@ .07½
35 per cent lead sulphate	lb.	.07	@ .07½
Zinc sulphate		.03¼	@ .03½

MINERAL RUBBER

Gilsonite	ton	70.00	@ —
Genasco (c. l. factory)	ton	50.00	@ —
(l. c. l. factory)	ton	52.00	@ —
Hard hydrocarbon	ton	35.00	@ 45.00
Soft hydrocarbon	ton	30.00	@ 40.00
M. R. X.	ton	—	@ —
Pioneer (c.l. factory	ton	46.00	@ —
(l.c.l. factory)	ton	48.00	@ —
Raven M. R.	ton	—	@ —
320 M. P. hydrocarbon (c. l. factory)	ton	50.00	@ 55.00
(l. c. l. factory)	ton	57.50	@ —
300/310 M. P. hydrocarbon (c. l. factory)	ton	40.00	@ —
(l. c. l. factory	ton	45.00	@ —
Synpro, granulated, M. R. (factory)	ton	59.50	@ 75.00

SOFTENERS

Acids

Acetic, 28 per cent	cwt.	2.50	@ 2.75
Carbolic (phenol)	lb.	.09½	@ .12
Cresylic, 97 to 99 p. c. pale	gal.	.80	@ —
Muriatic, 20 degrees	cwt.	2.00	@ —
Nitric, 36 degrees	cwt.	5.50	@ 6.00
Sulphuric, 66 degrees	ton	18.00	@ 20.00
60 degrees, bulk	ton	11.00	@ 12.00
Tartaric, crystals	lb.	.28	@ .30

Alkalies

Caustic soda, 76 p.c.	cwt.	3.90	@ 4.00
Soda ash, 58 p.c.	cwt.	2.15	@ 2.25

Oils

Castor, No. 3, bbls.	lb.	.09	@ .09½
Corn, crude, bbls.	lb.	.07½	@ .07¾
refined	lb.	.10	@ .10½
Chinawood, bbls.	lb.	.14	@ .15
Cottonseed,	lb.	.09½	@ .10
Glycerine, c. p. drums	lb.	.14½	@ .15½
Linseed, carload spot	gal.	.73	@ —
bbls.	gal.	.76	@ —
Palm, Niger	lb.	.05¾	@ .06
Lagos	lb.	.07	@ .07¼
Peanut, domestic crude	lb.	.07¼	@ .07½
Pine, steam distilled, over 930° sp. gr.	gal.	1.15	@ —
Rapeseed, refined	gal.	.86	@ .88
blown	gal.	.92½	@ 1.00
Rosin, first rectified	gal.	.35	@ .60
second rectified	gal.	.37	@ .45
Tar, commercial	gal.	.28	@ —
Soya Bean, crude, bbls.	lb.	.08½	@ .09¾

Resins and Pitches

Cantella gum	lb.	.50	@ ..
Cumar resin	lb.	.09	@ .13
Tar, retort	bbl.	12.00	@ —
kiln burnt	bbl.	11.50	@ —
Pitch, Burgundy	lb.	.05	@ .06
coal tar	ton	20.00	@ —
rosin	bbl.	6.75	@ 7.00
Rosin, grade B. ex-yard	bbl.	5.00	@ —
grade K	bbl.	5.70	@ —
Shellac, fine orange	lb.	.84	@ .90

Solvents

Acetone, drums, c.p.	lb.	.12½	@ .13
Alcohol, denatured, No. 1	gal.	.37	@ .38
Methyl, 95 per cent, drums	gal.	.62	@ .64
Ethyl, 190 proof, drums	gal.	4.70	@ 4.80
Benzol, 90 per cent	lb.	.25	@ .31
pure	lb.	.27	@ .35
Carbon bisulphide,	lb.	.06¾	@ .07½
tetrachloride	lb.	.10½	@ .12
Dimethylaniline	lb.	.45	@ .64
Naptha, motor gasoline, steel bbls.	gal.	.23½	@ —
68 to 70 degrees	gal.	—	@ —
73 to 76 degrees	gal.	—	@ —
Toluol, pure drums	gal.	.28	@ .34
Turpentine, spirits	gal.	.61	@ —
wood	gal.	.59	@ —
Xyol, pure	gal.	.40	@ .43
commercial	gal.	.28	@ .35

Waxes

Beeswax white, pure	lb.	.35	@ .38
Carnauba, No. 1	lb.	.46	@ .47
Ceresin, white	lb.	.09	@ .11
Bayberry	lb.	.20	@ .22
Montan, crude	lb.	.06½	@ .07
Ozokerite, hard, pure	lb.	.30	@ .33
Paraffin, pale, .885 sp. gr.	lb.	.18	@ .21
Petrolatum, amber, bbls.	lb.	.05	@ .05½
dark amber,	lb.	.04½	@ —

SUBSTITUTES

Black	lb.	.08	@ .15
White	lb.	.10	@ .17
Brown	lb.	.12	@ .16
Brown factice	lb.	.07	@ .15
White factice	lb.	.08	@ .16
Paragol, soft and medium	cwt.	6.81	@ —
hard	cwt.	6.81	@ —

VULCANIZING INGREDIENTS

Lead, black hyposulphite (black hypo)	lb.	.40	@ —
Orange mineral, domestic	lb.	.11	@ .13
Sulphur chloride (jugs)	lb.	.16½	@ .20
Sulphur, flour, Brooklyn brand (c.l.)	cwt.	—	@ —
Brooklyn brand (l.c.l.)	cwt.	—	@ —
Bergenport (c.l.)	cwt.	2.55	@ —
pure soft	cwt.	2.30	@ —
superfine (c.l.)	cwt.	—	@ —

Linseed Oil—The aggregate turnover in the market during the last two weeks has been comparatively light. Some of the larger consumers are said to be covered up to December yet there is a strong feeling that the price will stiffen a little very soon as stocks are not large.

Soya Bean Oil—Stocks are greatly depleted and holders are asking higher prices for what they have. Quotations are given at 8½ to 9¼ cents per pound, spot crude in barrels, with the market quiet.

Barytes—Producers are fairly busy with deliveries with prices holding steady.

Zinc Oxide—There has been a better feeling in this market than for some time due to the demand from the rubber trade.

Lithopone—Business has been good and consumption continues along broadening lines with the prospect for excellent business in the fall. Prices remain at 7 cents per lb. in bags, 7¼, car lots and 7½, less than car lots.

Litharge—Production has been curtailed and the demand slow with no change in prices.

Carbon Tetrachloride—Supplies are very light and the increased demand from the rubber trade has resulted in firm prices being maintained. While orders were confined to small quantities there was considerable volume.

Benzol—There has been a scarcity of the pure grade. On some contracts it was found difficult to deliver adequate quantities.

Phenol—Small lot transactions seem to be the rule with the demand for such lots showing some increase. The supplies in the hands of dealers is small and there is no difficulty in maintaining prices.

Aniline Oil—The market continues dull with abundant supplies and some improvement in the demand from the rubber trade.

Dimethylaniline—Demand is slow and the market spotty. Price range is from 45 cents to 64 cents.

The Cotton Industry

On account of the enormous amount of cotton fabrics of various kinds used in the different branches of the rubber industry the remark is frequently heard "The rubber industry is the cotton industry". Thus the recently issued preliminary figures of the Census Bureau showing the condition of the cotton industry in 1919 are of particular interest.

They show in detail the quantities and values of the various products manufactured in 1919. Respecting the cotton goods industry the report shows that in 1919 there were 1290 establishments throughout the country operating in 30 different states. Over 98 per cent of the total value of all the products of these 1290 concerns was in 17 states. The broad expansion of the industry is indicated in the comparative report showing that at the previous census three-quarters of the total value of cotton products was confined to 6 states, more than one-half to 3 states with Massachusetts alone producing one quarter.

Woven goods is decidedly the principal product of the industry and represents about 70 per cent of the total value. Sheetings had always been the leader of the long list of fabrics and in the previous census represented 27.2 per cent of the total value of woven goods with ducks representing only about 10 per cent.

There was a complete turnabout in 1919 when ducks took the leading place away from sheetings. The new census shows that the production of ducks in that year represented over 16 per cent of the entire value and sheetings less than 15 per cent. The enormous advance in the value of ducks reflects the tremendous prosperity of the automotive industry during this period.

It is an interesting fact, in the light of present market conditions and prices that 128,174,,000 pounds of tire duck at a value of $143,086,000 were produced in 1919. The census statement also shows that there were 29,917,000 pounds of tire fabric, other than duck manufactured and valued at $32,602,000.

The total value of all the products of the cotton goods industry in the 17 states that represent 98 per cent of the entire industry are here given with the number of establishments in each state:

	Value of Products	Number of Establishments
Massachusetts	$596,687,000	191
North Carolina	318,368,000	311
South Carolina	228,440,000	145
Georgia	192,188,000	132
Rhode Island	155,488,000	74
Connecticut	101,551,000	47
New Hampshire	85,986,000	16
Alabama	79,643,000	58
Pennsylvania	66,539,000	119
New Jersey	58,711,000	33
Maine	56,564,000	14
New York	49,076,000	37
Virginia	32,535,000	10
Tennessee	22,461,000	16
Maryland	18,455,000	14
Texas	13,920,000	15
Mississippi	8,067,000	15

Akron Stock Prices

(Special Akron Correspondence)

Akron rubber stocks have forfeited a part of their recent gains during the recent weakness on stock markets throughout the country. Unfavorable reports of present sales is one of the causes assigned.

Goodrich has dipped below the 30 mark again and Goodyear common has dropped back to 11, while Goodyear preferred which had passed 30, is down to 28½.

Miller common is attracting bids of 50 and Firestone common is being sought at 60. Offerings are not plentiful, holders clinging firm to their belief that prices are bound to go upward following temporary spells of depression.

Following are quotations as of Aug. 16:

	Bid	Asked
Amer. R. & T. com	35	40
Amer. R. & T. pfd.	..	80
Amazon Rubber	..	20
Firestone T. & R. com	60	62
Firestone T. & R. 6 pct. pfd.	80	85
do 7 pct. pfd.	70	75
General T. & R. com	150	200
do 7 pct. pfd.	75	80
B. F. Goodrich com	30	30½
do 7 pct. pfd.	72	75
do 5 yr. 7 pct. notes	90	90½
Goodyear T. & R. com	11¼	12
do 7 pct. pfd.	28½	29
Goodyear 8's	101	102
India Rubber com	65	75
do 8 pct. pfd.	60	85
Mason T. & R. com	..	10
do 7 pct. pfd.	55	58
Marathon T. & R. com	2¾	3
Miller Rubber com	50	60
do 8 pct. pfd.	65	66
Mohawk Rubber	65	80
Portage Rubber com	..	5
do 7 pct. pfd.	4	6
Republic Rubber com	¼	⅜
do 7 pct. pfd.	9	12
do 8 pct. pfd.	2¾	3¾
Rubber Products	35	50
Star Rubber com	..	100
do 8 pct. pfd.	..	100
Swinehart T. & R. com	..	40
do 7 pct. pfd.	..	70
Phoenix com	..	15
do pfd.	..	90
Standard Tire com	..	100
do pfd.	..	90

New York Stock Prices

Following are the New York Stock Exchange quotations on the various rubber stocks listed for August 18:

	Bid	Asked
Fisk Rubber Co.	9⅞	9½
B. F. Goodrich Co.	30	31¼
Kelly-Springfield Tire Co.	38	38½
Keystone Tire Co.	12¼	13
U. S. Rubber Co.	48	48¼
do 1st. pfd.	86	98

New Incorporations

NEW YORK

Winthrop Tire & Supply Co., Brooklyn, $5,000. Incorporators: E. J. Deffaa, J. S. Seiler, J. J. Burke. Attorney, C. D. Cords, 15 William St.

Tryneski-Peterson Tire & Accessory Co., Rochester, $50,000. Incorporators: K. J. Tryneski, E. C. Peterson, E. C. Hanna. Attorney, H. F. Barnes, Rochester.

Brighton Tire & Rubber Co., to deal in tires and rubber goods, Brooklyn, $10,000. Incorporators: R. Vagt, H. J. Hurn, A. F. Rollin. Attorney, C. W. Philipbar, 215 Montague St., Brooklyn.

Carman Tire Co., Manhattan, to deal in tires and rubber goods, $50,000. Incorporators W. N. Callahan, F. G. and W. A. Marsh. Attorneys, Cole & Trigg, 165 Broadway.

Fibre Tire & Rubber Co., Manhattan, to deal in tires and rubber goods, $100,000. Incorporators; M. N. Salamon, E. F. Stoeckle, E. F. File. Attorney, C. Foley, 38 Park Row.

Middletown Rubber Co., Manhattan, $1,000,000 to $2,000,000.

DELAWARE

Corrugated Rubber Corp., to deal in rubber in crude, raw and manufactured state, $1,500,000. Attorney, Corporation Trust Co. of America, Wilmington.

B. & B. Tire Co., to manufacture tires, $50,000. Incorporators, Robert O. Blakeley, Frank Bradour, Joseph Williams; Pittsburgh. Attorney, Capital Trust Co., Delaware.

Tru-Matic Tube & Sales Co., Wilmington, to manufacture automobile tubes and other rubber products, $500,000. Incorporators, M. B. Hawkins, T. F. Magarity.

John G. Gray, Ford Building, Wilmington.

Sales Corporation of America, Wilmington, to manufacture rubber articles, $12,000. Delaware agent, Colonial Charter Co., Wilmington, Delaware.

MASSACHUSETTS

Adirondack Tire & Tube Co.; Springfield, to manufacture tires and tubes. $200,000.

Beetle-Barnes-Baker Inc., Lynn, to manufacture and market rubber cement, $30,000. Incorporators; Lorenz F. Muther, Newton Centre, William R. Beetle, Boston; Clarence L. Newton; West Newton.

MAINE

Union Rubber Co. Inc., Calais, to manufacture and deal in all kinds of boots, shoes, rubbers, made wholly or partly from rubber. $450,000.

NEVADA

Fresno Tire & Rubber Co., to deal in rubber tires, $2,000,000. President, D. B. Eastman, Fresno, California; Secretary and Treasurer, C. A. Bunnell, Pasadena, California. Principal office, Reno, Nevada.

NEW JERSEY

Chicago Rubber Clothing Co., 44 Clinton street, Newark, to manufacture rubber clothing, etc., $500,000.

CALIFORNIA

West Coast Rubber Corporation Inc., to manufacture "Bonner" inner tubes. $2,000,000. Incorporators, C. L. Williamson, F. C. Jordon, W. F. Peterson, W. W. Felt, Jr., F. Stanford, J. W. MacClatchie, Principal office, 33 Dolores St., San Francisco, Calif.